

# The Chemical Age

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## Notes and Comments

### The British Industries Fair

AT the present moment when the slogan "Buy British" meets the eye at every turn it is opportune to consider the important part which British chemicals play in the production of British goods, and this will be the main theme of the Chemical Section at the British Industries Fair which opens in London and Birmingham on Monday next. Chemicals enter into every branch of industry, and the prosperity of the chemical industry is, therefore, intimately bound up with the prosperity of all other industries in the country. The Chemical Section will again occupy the annexe to the Grand Hall at Olympia close to the Druggist Sundries and Plastics Sections, and will include the usual wide range of products. The arrangements for the Section will, as usual, be under the auspices of the Association of British Chemical Manufacturers. The Association will have an office in the Section to deal with any inquiries that visitors may wish to make, and overseas buyers may rely on the best information being obtained for their purpose. In common with all other industries, the chemical industry has suffered from the effect of the world economic upheaval, but there are signs of improvement ahead.

A serious fall in the price of sulphate of ammonia has led to a decreased production of sulphuric acid and this has caused a hastening of rationalisation, the resulting concentration of production in larger units having led already to a lowering of cost in spite of a considerable increase in the price of raw material. The position in regard to the heavy chemical industry has shown a marked improvement since we left the gold standard, and since manufacturers realise that the advantages of this position depend on keeping prices as low as possible, increases in price have only taken

place where necessitated by the equivalent rise in the cost of imported raw materials. Although the exports of creosote oil have dropped, pitch shows a decided improvement. The effort to stabilise the market has led to a gradual advance in price which has been further improved since our departure from the gold standard. The demand for road tar continues to be good, and exports to the Continent show a considerable improvement, although prices remain the same. The position is also better in regard to tar spirits, toluol, carbolic and cresylic acids and pyridine bases than a few months ago. Much depends, however, on an improvement in the general coal outlook which again is bound up with the question of iron and steel production, etc. The wood distillation industry has also benefited from the premium in exchange rates over foreign competitors, but this industry is in the peculiarly unfortunate position of suffering from the very progress of chemical technology.

The dyestuffs industry shows a welcome bright spot in regard to exports, an increase of 13 per cent. over 1930 being anticipated for 1931. This would seem to indicate that British prices compare favourably abroad; at home, of course, British makers are fulfilling their undertaking to meet the fair foreign price, but here again the advance in price due to the depreciated currency is expected to lead to the substitution of foreign products by British equivalents which the British manufacturer has long claimed to be quite equal to the so-called foreign "specialities." The fine chemical industry shows perhaps a more striking advance. The total imports of fine chemicals in 1929 and 1930 were respectively £1,340,000 and £823,000, a drop of nearly 40 per cent. While part of this decrease can be attributed to the fall in price values and the reduced

demands of British industries, production statistics show that there has been an actual increase in production of about 15 per cent. which indicates that a considerable proportion of this advance has resulted from an improvement in the industry itself.

### Foreign Marketing

In a recent address on foreign trade and marketing, Sir Francis Goodenough expressed the opinion that too many business men were in the frame of mind which said: "We cannot be bothered with overseas trade: it means so much more trouble than home trade—what with freights to consider and rates of exchange and difficulties of credit and of language and so forth. No, thank you, we would rather stick to the home market." Reading these words we pondered the question of how far they might be applicable to those industries with which we are most nearly concerned. Are the chemical and chemical plant manufacturers of this country all entitled to decline the cap on the ground of its being a misfit? Foreign trade demands careful consideration of local conditions in foreign countries. The conditions to be specially studied very naturally from one industry to another. Thus the textile industries have to consider questions of style, colour preference, climate, etc. The manufacturers of products which are to be used in local industries, *e.g.*, chemicals or chemical plant, must make a study of local industrial and economic conditions in the countries with which it is hoped to trade. In the case of chemical plant, the whole design may be fundamentally affected by such conditions. In a country where fuel is dear, an expensive plant with low fuel consumption may be justified. Where fuel is cheap, a less expensive and less efficient plant may be the most economical. If skilled labour is difficult to obtain, a less efficient plant may be more practical than a highly efficient one if it requires less skilled supervision and if repairs are more easily effected. Assuming that all such factors have been taken into account and that the most economical design has been achieved, there remains the further step of demonstrating these advantages to the prospective buyer and convincing him that they really exist. As industry becomes more scientific and more competitive, the buyer of plant becomes less inclined to rely on the experience of the manufacturer of the plant, as was largely the case at one time.

From his own experience the buyer is usually familiar with the "snags" he has encountered in operating similar types of plant and he requires to be satisfied that these difficulties have been foreseen and allowed for in the design which the seller submits to him. The salesman of the plant must therefore understand thoroughly the design of his own plant and of competing types. He should also have had sufficient operating experience to give him the necessary insight into the problems of operation. If he is selling abroad he should also be able to speak the language of the country which he expects to provide him with profitable business. Unfortunately these qualifications are too seldom realised in practice. Too frequently the attempt is made to sell from this country with an imperfect knowledge of conditions abroad. Where a foreign agent is employed, he may have the knowledge of the local conditions and language but is usually lacking in the technical knowledge. Neither of these methods is

satisfactory, and the combination of the two, which is frequently adopted, is little more so. The objection can legitimately be made that to maintain experienced agents, possessing the desired qualifications, in a number of foreign countries is an expense which can be borne only by a large firm. In the chemical plant industry there are few firms of such a size. This difficulty can, however, be overcome, as it has been overcome by several Continental firms, by setting up a joint export selling agency maintained by a number of firms engaged in similar, but not competitive, lines of manufacture. Co-operative selling for export has recently been taken up in this country by the coal and steel industries and it is without doubt a movement which is gaining force. To some extent this may be, though to conflict with traditional British individualism but the hard lessons of recent years have taught that co-operative effort is necessary and can be exerted effectively without undue sacrifice of true individuality.

### Madrid Congress Postponed

THERE is a general feeling of regret throughout the chemical industry, not only in this country, but in other parts of the world, that the ninth International Congress of Pure and Applied Chemistry, which was to have been held in Madrid from April 3 to 10, has been indefinitely postponed. There was every prospect that the Congress would bring together representatives from all the leading countries with the common object of furthering the interests of chemical science, and the outline of the programme which we gave in these columns on January 23, served to show that the assembly would have been of exceptional technical value. Other countries, however, are suffering from somewhat similar economic conditions to those prevailing in Great Britain, and the organising committee has been reluctantly forced to the conclusion that the congress must be postponed, as the present state of depression would seriously limit its usefulness. There is consolation, however, in the knowledge that the Congress is not cancelled: it is merely postponed until more favourable times, when it is hoped to carry out the original programme, with Madrid as the venue.

**ALCOHOLIC FERMENTATION.** By Arthur Harden. London: Longmans, Green and Co. Pp. 244. 15s.

**CONDITIONS AND PROSPECTS OF UNITED KINGDOM TRADE IN INDIA, 1930-31.** By Thomas M. Ainscough. London: H. M. Stationery Office. Pp. 248. 3s. 6d.

**DISCUSSION ON THE CRITICAL INCREMENT OF HOMOGENEOUS REACTIONS.** London: The Chemical Society. Pp. 61. 1s. 6d.

### The Calendar

- Feb. 22.**—Institute of Chemistry (Leeds Area Section). "Recent Applications of Microbiological Processes in Pure and Applied Chemistry." Professor F. Challenger. 7.30 p.m. University, Leeds.
- Feb. 24.**—Society of Dyers and Colourists (Midlands Section). "Cellulose as a Chemical Reagent." J. M. Preston. 7.30 p.m. Derby Technical College.
- Feb. 24.**—Society of Glass Technology. Joint meeting with the Ceramic Society, University, Sheffield.
- Feb. 26.**—Chemical and Allied Industries North East Coast Dinner. 7.30 p.m. Royal Station Hotel, Newcastle-on-Tyne.
- Feb. 22—Mar. 5.**—British Industries Fair. Olympia and White City, London, and Castle Bromwich, Birmingham.
- Feb. 20.**—North of England Institute of Mining and Mechanical Engineers. General meeting. 2.30 p.m. Lecture Theatre of the Institute, Newcastle-on-Tyne.
- Feb. 26.**—Society of Chemical Industry (Liverpool Section). Joint meeting with the Liverpool and N.W. Section of the Institute of Chemistry. "Anthocyanins." Robert Robinson. 6 p.m. Muspratt Lecture Theatre, University, Liverpool.

## Sudden Death of Sir Arthur Duckham

### A Loss to British Chemical Industry

BRITISH chemical science and engineering has sustained a grievous loss by the death of Sir Arthur McDougall Duckham, G.B.E., K.C.B., which occurred suddenly at his residence at Ashtead, Surrey, on Sunday morning. He was taken ill shortly after arriving downstairs in the morning, and died almost immediately. Sir Arthur Duckham, who was fifty-two years of age, was one of the most distinguished engineers and industrialists of his time, and was president-elect of the Federation of British Industries. He was one of the founders and a past-president of the Institution of Chemical Engineers, a Member of the Institution of Civil Engineers, a Member of the Institution of Mechanical Engineers, and a Fellow of the Institute of Fuel, and from 1919 to 1921 he presided over the Society of British Gas Industries.

Educated at Blackheath, he started his career in engineering workshops under the late Sir George Livesey, and at an early age he decided to specialise in furnace work and carbonisation. He became assistant engineer of the Bournemouth Gas and Water Company, under Col. Woodall, with whom he invented and patented the vertical retort system of continuous coal carbonisation. He resigned his post and with a small capital he set out to work to convince the gas industry of the soundness of his invention. Within a few years he broke down old prejudices and patented several more inventions, and his name rapidly became known throughout the industry for efficiency in works construction.

At the time of his death, Sir Arthur Duckham was chairman of Woodall-Duckham (1920) Ltd., the Woodall-Duckham Vertical Retort and Oven Construction Co. (1920) Ltd., British Furnaces Ltd., Peco Ltd., Stourbridge Refractories Ltd., and the Thermal Industrial and Chemical (T.I.C.) Research Co., Ltd. He was also a director of Alexander Duckham and Co., Ltd., British Benzol and Coal Distillation Ltd., British Magnesite Calcining Co., Ltd., and the Leatherhead Gas and Lighting Co.

Some evidence of the growth of Sir Arthur Duckham's activities is afforded by a brief review of the operations of the Woodall-Duckham Vertical Retort and Oven Construction Co. (1920), Ltd., in 1931. Woodall-Duckham gasworks carbonising plants ordered during the year represented a total capacity of 637,000 tons of coal per annum. In addition, a Becker coke oven installation was ordered with a total annual capacity of nearly 382,000 tons of coal. Several new orders were received for Woodall-Duckham continuous vertical retorts of the 103 in. type, the total annual capacity of installations of this type now working or under construction amounting to 1,650,000 tons of coal. During 1931 the more recent intermittent vertical chamber gained considerably in popularity. Woodall-Duckham waste heat recovery plants also made good progress. There are now about 155 of these installations working or in course of erection, and their hourly capacity is 910,000 lb. of steam. Tar treatment plants of the T.I.C. type were erected at several works during the year.

Sir Arthur Duckham, who was made K.C.B. in 1917 and G.B.E. in 1929, was Deputy Director-General of Munitions Supply during the war, and subsequently became chairman of the Advisory Committee of the Ministry of Munitions. He was also Director-General of Aircraft Production and, in 1918-1919, a member of the Aircraft Council.

One of the outstanding events in Sir Arthur Duckham's public career was his visit to Australia in 1928-29 as the head of a Commission, appointed by the Government, comprising Sir Hugo Hirst, Sir Ernest Clark and Mr. D. O. Malcolm, to advise on trade opportunities in Australia. The Commission spent seven months in the Commonwealth and returned with a strong belief in the need for closer co-operation with Australia and other parts of the Empire. It was as a result of his leadership of the Commission that he received his G.B.E.

In 1929, Sir Arthur Duckham was appointed one of the representatives of other industries on the Coal Commission presided over by Lord Sankey, and he submitted a report signed only by himself, in which he agreed with the chairman in favouring the State ownership of mineral rights but expressed his opposition to the national ownership of the mines. His view was that the nationalisation of the coal mining

industry would be an unprecedented and colossal experiment and that a mistake would result in a national calamity. He held that all mineral rights should be acquired by the State and controlled by a Minister of Mines, and he put forward a scheme of his own for the amalgamation of colliery interests in several districts in the form of statutory companies.

In the ordinary course of events, Sir Arthur Duckham would have succeeded to the presidency of the Federation of British Industries this year. He was already chairman of the Standing Committee on Mineral Transport. In 1930 he was president of the British Export Society, and he was chairman of the advisory committee which was set up to advise the Government on applications for assistance from public utility undertakings under Part I of the Development (Loan Guarantees and Grants) Act, 1929. Pressure of professional duties, however, compelled him to resign that office.

In all the chemical ramifications of the gas industry, Sir Arthur Duckham was a man of wide outlook and great knowledge, and his William Young Memorial Lecture to the North British Association of Gas Managers in 1930 was one of his most memorable discourses. In that lecture he urged that a great deal more could be done in furthering the wider use of sulphate of ammonia. He also stressed the need for more research work on tar. He was a member of the Institution of Gas Engineers, whose motto is "Assidue Exquirendo Servire" ("By diligent investigation we serve") and he set the industry a noble example by applying that motto to all his activities.

The funeral was at St. Giles's, Ashtead, on Wednesday, when all the institutions with which Sir Arthur was associated were represented. On the same day a memorial service was held at St. Martins-in-the-Fields, Trafalgar Square.

#### Pine Oil Production in Tasmania

HUON pine oil is said to be produced in Tasmania on a commercial scale by steam distillation of sawdust from the wood of *Dacrydium franklini*. The oil is of a light yellow colour and the largest constituent is reported to be methyl eugenol possessing antiseptic powers and a suitable ingredient for hair washes and medicated soaps.



SIR ARTHUR DUCKHAM.

## Benzyl Cellulose: A New British Plastic Its Commercial Possibilities

*This new plastic material which is being manufactured commercially for the first time by Imperial Chemical Industries, Ltd., will be shown at the London and Birmingham branches of the British Industries Fair. It has unique chemical and electrical stability, is impermeable to moisture, and of non-inflammable nature.*

ALTHOUGH the first mention of cellulose ethers is by Suida (*Moutshett*, 1905, 26, 415) and the methylation of cellulose is described by Denham and Woodhouse (*J. Chem. Soc.*, 1913, 104, 1735), it is only from 1912 onwards that there appears a long list of patents dealing with the preparation of alkyl celluloses and later aralkyl celluloses. The first products described are soluble in water and a methyl cellulose, soluble in cold water and insoluble in hot water, is now made and sold by the I. G. under the name of Colloresin D. Later patents deal with ethers insoluble in water and soluble in organic solvents. Cellulose ethers have not been used so far for many technical processes, such as moulding, because of their prohibitive price, but they have been manufactured on the Continent for some little time. The stability of cellulose ethers, however, recommends them to the plastics industry and it is probable that the next few years will see them extensively used.

Benzyl cellulose is prepared by the action of caustic soda and benzyl chloride on cellulose. Benzyl alcohol, dibenzyl ether and sodium chloride are the by-products formed. As benzyl cellulose is soluble in these organic by-products the reaction mass is in a rubbery gelatinous form from which the by-products are removed during the purification. Various organic solvents may be used in the purification to extract the benzyl alcohol and dibenzyl ether, but the sodium chloride is removed during the water washes. When purified and dried, benzyl cellulose is of a cream colour, which becomes white when bleached. The viscosity of the product may be varied either during the process of benzylation or by subsequent treatments. In this way, a range of materials suitable for various technical applications may be prepared. Various degrees of benzylation may be attained, but the technical product, with the most useful range of solubility contains approximately two benzyl groups per  $C_6H_{10}O_2$ . Benzylation is a progressive reaction and therefore differs from acetylation, where the tri-ester is first prepared and is then partially hydrolysed to produce the acetone-soluble acetate, which is employed for most industrial purposes.

### Outstanding Features

The outstanding property of benzyl cellulose is its stability. It resists the action of alkali up to 20 per cent. concentration, is unattacked by sulphuric acid of accumulator strength (sp. gr. 1.4) and thus has advantages over cellulose acetate. It is thermo-plastic and can be heated up to 180° C. without fear of decomposition, and being relatively non-inflammable, like the acetate, can be worked at high temperatures without danger. A property which gives it advantages over other cellulose derivatives is its resistance to water. Its hygroscopicity is 0.5-1.0 per cent., compared with 8-9 per cent. in the case of cellulose acetate. Films and articles made from benzyl cellulose are practically impermeable to water. The electrical properties of benzyl cellulose are also excellent and since it is unaffected by ozone there is promise of a wide outlet for it in certain directions in the electrical industry where rubber rapidly perishes.

Dibenzyl cellulose is soluble in aromatic hydrocarbons such as benzol, toluol and xylol, to which 10-20 per cent. of industrial spirits have been added. It swells in acetone and also in toluol, but does not dissolve; it is soluble in acetone-benzene mixtures, ethyl lactate and benzyl alcohol. A range of plasticisers may be used and includes the aromatic ethers of glycerol, such as the ditolyl ether of glycerol, tricresyl and triphenyl phosphate, and dibutyl phthalate. It is therefore evident that such cellulose ethers may be used as the basis of lacquers, enamels and various coating compositions and dopes; linoleum substitutes, celluloid, safety glass fillings and thermoplastic moulding materials and masses; insulating compositions, silk, aeroplane dopes, artificial leather and gramophone records.

### Moulding Powders

The thermoplasticity and stability of benzyl cellulose make it an ideal base from which to prepare moulding powders.

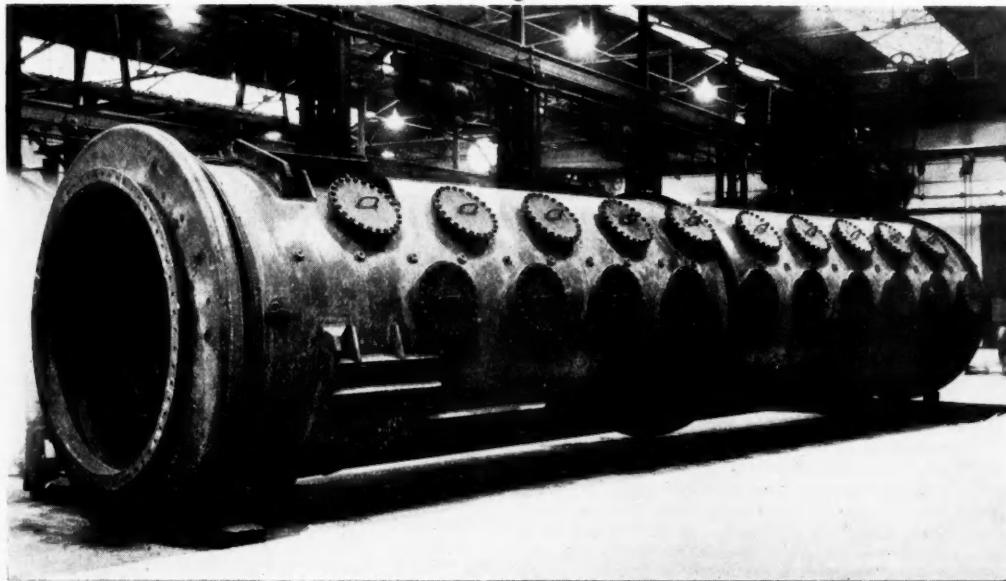
Such moulding powders show no signs of decomposition on prolonged storage. Moulder are familiar with the smell of acetic acid which develops in many cellulose acetate moulding materials on storage, indicating the gradual decomposition which is taking place due, possibly, to traces of sulphuric acid, etc., left in the cellulose acetate. Even the action of relatively strong acid or alkali leaves the benzyl cellulose composition unchanged. Marine weathering tests on ship-board show that mouldings from these moulding materials, after months of exposure in the heaviest of seas and extremes of climate remain unaffected. The thermo-plastic properties of benzyl cellulose, which melts at about 180° C. but softens at lower temperatures, endow the moulding materials with exceptional flowing properties. Such moulding materials are therefore ideal for use in injection moulding. They are free from volatile materials, no solvent is used in their manufacture, and the products, therefore, do not warp. Moulding is carried out at temperatures of 120-160° C. For straight moulding a pressure of  $\frac{1}{2}$ -ton per sq. in. suffices, while for injection moulding the normal pressures and injection equipments are used. No curing or hardening process is necessary.

Benzyl cellulose moulding materials have been prepared by Imperial Chemical Industries and are now introduced to the moulding industry for the first time. These moulding materials are produced in a wide range of light colours, which do not darken on exposure. Unlike nitrocellulose, benzyl cellulose is unaffected by sunlight. Clear films made from it do not discolour on prolonged exposure. Transparent and translucent effects can be obtained and there is no limit to the variety of designs and colour effects which can be produced by the moulder. The advantages over the limited colours and effects which can be obtained with ebonite or with phenol-formaldehyde resins are therefore obvious. Benzyl cellulose moulding materials do not stain the moulds as the sulphur in the ebonite moulding materials is wont to do, nor do they require any airing time. There is also no actual waste when using this new moulding material, as scrap is capable of re-use.

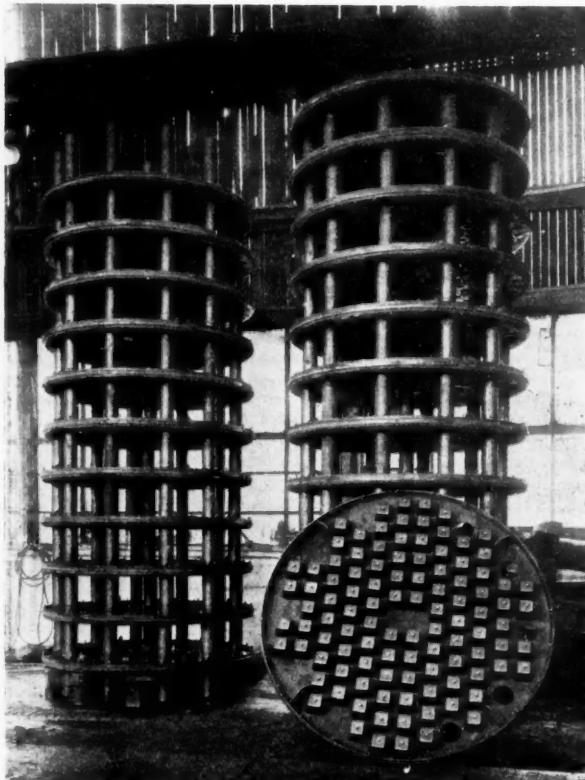
### Resistance to Water

The property which will make these new moulding materials of greater interest to moulders is their resistance to water. At present cellulose acetate is almost exclusively used in injection moulding. Cellulose acetate, however, is not very resistant to moisture. When exposed in the normal atmosphere it takes up 7-9 per cent. of moisture. For certain moulding acetate materials cannot be used. We are all familiar with the black ebonite part which holds the nib of the fountain pen and which cannot be made from the same material as the remainder of the pen because the cellulose acetate compositions are not resistant to moisture, or ink. Similarly cellulose acetate cannot be used for certain types of bottle stoppers. The scope of injection moulding has therefore been limited until now because of the difficulty in finding a suitable material. It has now been largely expanded by the advent of benzyl cellulose materials. These moulding materials give moulding with much reduced contraction on cooling. It is therefore possible to mould articles which require a high degree of precision.

As has already been indicated, the use of these new moulding materials is not restricted to ornamental materials but extends into the electrical field. Special types are made for electrical uses and the electrical resistivity in some of these is as high as  $2.7 \times 10^{15}$  ohms. per cm.<sup>3</sup> The dielectric strength is of the same order as that of phenol formaldehyde moulding materials. The power loss, however, is much less, being 0.8-1% at wave lengths of 300 metres and so presents an advantage. The breakdown state is 250-300 kV. per cm., and they have the great advantage of being entirely impervious to moisture and non-tracking. From products of purely academic interest, the cellulose ethers have therefore become technical products of considerable value to the plastics trade generally.



ELECTRICALLY-WELDED FRACTIONATING COLUMN: THE SHELL (AS ERECTED FOR TESTING) SHOWING THE SPECIAL MANHOLES WHICH GIVE ACCESS TO EACH TRAY.



INTERNAL TRAYS, SHOWING DETAILS OF CONSTRUCTION.

These photographs show one of two electrically-welded fractionating columns which have been built to the order of Shell-Mex Ltd. by Thompson Bros. (Bilston) Ltd. Each column consists of a domed top, two cylindrical shell sections and a bottom expansion piece, the latter being connected to the still. Inside each of the columns are 22 trays, to each of which access is gained by means of special manholes provided in the cylindrical shells. The mild steel top cover is dished and flanged from  $\frac{1}{2}$  in. plate and fitted with connecting ring, baffle plate and reflux pipe. The body shells are 7 ft. 2 in. internal diameter  $\times \frac{5}{8}$  in. thick. The manholes were pressed in one piece with a machined flange  $\frac{1}{8}$  in. thick, the body being only  $\frac{1}{8}$  in. thick. The trays inside each column are 7 ft. 1 in. diameter, pressed with a flange  $3\frac{1}{4}$  in. deep and made from  $\frac{1}{8}$  in. plate. Pressed steel square bubble caps to the number of 104 are fitted to each tray, giving a total of 2,288 bubble caps in each column.

Provision is made on each tray for a packing gland and ring in sections, the packing being pure asbestos material. Cleaning door, sampling cocks, and other fittings complete the shell. All joints are made by means of copper asbestos gaskets, and the completed columns were tested to a pressure of 30 lbs. per square inch.

#### A Welded-Steel Fractionating Column of British Manufacture

## Modern Ball Mills and Pebble Mills

### The Technique of Grinding in Paint and Lacquer Manufacture

*The technique of ball mills and pebble mills was dealt with in a paper read before the Oil and Colour Chemists' Association on Thursday, February 11, when Mr. Noel Heaton, the President of the Association, presided.*

INTRODUCING his subject, Mr. S. Wilmer Kendall pointed out that in its simplest form a ball mill is merely a hollow cylinder mounted horizontally on bearings so that it may be rotated by power. The cylinder, which is partly filled with pebbles, or iron or porcelain balls together with the paint pigments and liquid vehicle, and then rotated, is usually made of mild steel, lined with various hard substances which are resistant to impact and abrasion. One of the most useful liners is Belgian silex, a silica rock made in blocks 4 to 6 in. in thickness, 6 to 8 in. wide, and 8 to 14 in. long, secured to the inside of the steel cylinder with Portland cement and ground silica. Flint pebbles are usually employed as the grinding media with silex linings, and high grade pebbles in light coloured silex linings will produce white paints without sign of discolouration provided the pigments used are not hard and abrasive. Most whites and all delicate tints, however, are best ground in mills lined with porcelain, and the smaller mills have the porcelain linings made in one piece without joints in the shape of a cylindrical barrel, enclosed in an iron or steel shell to prevent breakage. Large mills are often lined with porcelain bricks. For experimental work and the production of small quantities of special paints or cellulose lacquers, porcelain pot mills are invaluable, the balls being made of a similar porcelain but usually fired to a lesser degree of hardness.

#### Un-lined Steel Mills

The use of un-lined steel or cast iron mills using balls of the same materials is confined to the grinding of those products where contamination by metallic iron was immaterial. Several types of iron and steel balls are available commercially for use in these mills. Granite balls are now being used to a considerable extent in America and Germany, particularly for the production of heavy bodied white nitro-cellulose lacquers where the maximum gloss is required. Granite balls, however, are not usually available under  $1\frac{1}{2}$  in. diameter and they are used with the addition of  $\frac{3}{4}$  in. balls. Another interesting grinding medium is a tightly coiled hardened steel spiral, introduced under the name of "helipeb," and which is capable of pulverising roots, barks, paper pulp and asbestos fibre. In use these spirals are constantly opening and closing under the rotating action of the mill, alternately gripping and releasing the fibrous solids and similar materials which would matt and pack together when ordinary balls are used.

The chief type of ball or pebble mill for general use in the paint and lacquer trades is the geared mill. A simpler form of mill which should be confined to sizes under 3 ft. in diameter, is the ungeared or direct drive mill. Mills under 2 ft. in diameter usually become drum or barrel mills of the unlined type, with the body of the mill itself made from a one-piece porcelain or iron casting which is permanently mounted in a carriage rotated in the usual way by pulleys. Such mills are becoming very popular for cellulose colour work. They are easily cleaned and enable the production of small frequent batches of many widely different products. Below this range, comes the pot or jar mills, which are merely iron or porcelain jars with clamp-on covers, so designed that they may be dropped into suitable revolving carriages after they have been charged.

In the case of large mills, which the charge of paint or lacquer is sensitive to the slightest heating effect, water jacketed types are now available. A special mill designed for the grinding of black cellulose lacquers is the eccentric ball mill, which has the effect of causing the balls to surge from end to end in the barrel, in addition to giving the ordinary tumbling action, thus causing increased rapidity in grinding and particularly the breaking-down of clots of dry pigment which will sometimes form. The power consumption in this mill may be increased to the extent of 50 per cent. A recent development which may be applied to practically all types of existing mills, is the lifting bar, which acts much in the same way as baffle bars but they accomplish the same

purpose, viz., improve grinding and reduce the wear on the shell due to slippage, without stopping the normal grinding action which takes place between the shell, or lining, and the balls. In addition, they set up among the balls themselves a differential movement which greatly increases the grinding efficiency.

#### Rubber Lined Mills

A recent innovation of some interest is the lining of wet grinding ball mills with soft rubber. Rubber linings are practically free from wear, and are claimed to outlive half-a-dozen silex linings of four times the thickness. Their use, however, must be confined to water paints or distempers or methylated spirit enamels because so far no suitable commercial rubber has been compounded which will withstand the swelling effect of white spirit, turpentine or such aromatic solvents as are used in oil paints and cellulose lacquers. Rubber linings for this purpose are generally 1 in. thick and replace 4 in. silex linings, thus permitting larger charges to be ground in one batch. In the Rexman balanced rod mill, steel rods replace the balls and pebbles of the conventional mill with one important difference. The rods do not loosely tumble or roll at will in the grinding cylinder, but are held in groups by two spiders, one at each end of the mill. Each group of rods is supported by one of the spokes of the spider and the rods themselves all pass through the common chamber enclosed by the shell. By thus dividing and supporting the rods, the centre of gravity of the road load practically coincides with the axis of rotation of the mill and dynamic balance is obtained. The cylinder or casing does not revolve; the spiders, with their load of rods, revolve inside the stationary casing, the main shaft carrying the spiders passing through stuffing glands in each end of the casing to prevent leakage of the paint around the shaft. It is claimed that with this mill the same grinding effect is obtained with one-third the power consumption.

#### Factors Affecting Grinding Efficiency

Dealing with factors affecting efficiency of grinding it was pointed out that the most important factors are (1) the size of the balls or pebbles in relation to the consistency of the product ground; (2) the speed of rotation for the mill; and (3) the volume of grinding media employed in relation to the mill charge. In order to secure the greatest grinding effect the smallest possible balls or pebbles should be used, but the limiting factor is the consistency of the product being ground. The proper speed of rotation of ball mills is a subject generally neglected by users. Increased outputs up to 20 per cent. have been obtained by slowing down a mill five revolutions per minute or, conversely, by speeding it up. Attempts have been made to formulate definite rules for mill speed in terms of the diameter of the mill and several mathematical expressions have been devised. With regard to the relative volumes of grinding media and mill charge, the optimum grinding condition is that in which the balls rise to the highest point visible before cascading, but this point must not be so high as to cause them to drop freely out of contact with each other. This condition is attained when the balls occupy just under one-half of the depth of the mill, or an apparent volume of approximately 45 per cent.

Considering the chemical and physical characteristics of pigments and vehicles in relation to grinding, the author pointed out that the accepted idea for paint making in ball mills is to dump in the pigment, extenders, oils, thinners and driers and let the mill do the rest. When working in this haphazard way two faults were commonly encountered. The first was floating or "flooding," which is a selective concentrating of one pigment in the surface of the paint, either as a continuous film or as streaks, spots or patches. The second is the inability to secure acceptable gloss, or, having obtained a product which dries glossy, the gloss "sinks in" or goes "sheary" in a short time. Floating is caused primarily by lack of pigment wetting and by unequal dispersion due to differences in the rate of dispersibility and solubility of the

pigments. Long continued grinding will eventually equalise differences in rate of dispersion and in some cases lack of wetting, but the latter is most easily controlled by selecting vehicles which will readily wet the pigment in question. Floating due to solubility of one of the pigments is of a different character and this trouble may be overcome by grinding for a sufficient length of time that the insoluble pigments become equally dispersed with the soluble. "Shear" effects are usually caused by including too large a proportion of volatile thinners in the initial grinding vehicle, resulting in the pigment being saturated, not with fixed oil but with a mixture, a portion of which (being volatile) is eventually lost by diffusion through the paint film. For the production of glossy products volatile solvents should be kept at a minimum until the end of the run when they may be added as required.

#### Working Costs

Any attempt to give accurate comprehensive costs for grinding inevitably result in a mass of conflicting figures owing to the large number of variable factors which are possible. Mechanical maintenance is negligible, and linings should last approximately 10,000 working hours under reasonable conditions. The wear on grinding media varies within narrow limits per 1,000 working hours, whilst the power consumption varies widely according to circumstances. Speaking generally, it is stated that the ball mill will produce paints and lacquers at from 15 per cent. to 50 per cent. under the cost involved in the more conventional methods of manufacture. Less than 2d. per gallon, as an all-in production cost, is claimed to be a very usual figure.

#### Points from the Discussion

The PRESIDENT said the author had made out a good case for the ball mill. It was useful that the matter had been dealt with from the point of view of the principles involved and that some of the basic principles essential in the operation of ball mills had been given because the lack of knowledge on that aspect of the problem had led to a great deal of prejudice against ball mills in the past.

Mr. E. KILBURN SCOTT asked what was the limiting temperature of ball mills in dealing with paint making materials. He also inquired why the percentage of voids with balls and pebbles which are not circular is greater than the percentage of voids with absolutely circular balls.

Replies to this question, the author said that the percentage of voids was rather larger with pebbles because of the projections on them, the figure being 40 per cent. to 50 per cent. as against 30 per cent. to 37 per cent. with balls. Temperature in ball mill grinding did not cause much of a problem because the mills were rotating in air constantly and there was not sufficient heat generated to be of serious moment to the paint manufacturer. Where steel and iron balls were used the temperature reached perhaps a maximum of 140° F. and that enabled the grinding time, in the case of carbon black being ground in a varnish medium, to be carried out in half the normal time.

Mr. E. J. AMIES, speaking with regard to the variable speed arrangements on ball mills, said that apparently the speed was fixed in regard to the job in hand. Was it advisable to alter the speed as grinding progressed? Did the actual amount of grinding alter as the material became more ground? Reference had been made by the author to the fact that reflex lakes were best ground in a ball mill but it would be interesting to know in what way they were better ground in a ball mill than in an ordinary roller mill. To this point the author replied that the danger of milling reflex lakes in a roller mill was that the operator would put on too much tension and completely destroy the crystal structure by pulverising the crystals. With a ball mill that could be prevented and a 100 gallons batch could be handled in a 4 ft. mill with 1½ hours grinding without any crushing of the crystal. With regard to speed the ideal condition was a constantly variable speed with an ammeter in the circuit to indicate the points of maximum grinding effects. The grinding effect was best obtained with heavy balls and at the start the maximum grinding efficiency would be obtained at lower speeds. As the grinding went on, however, the speed of the machine should be increased up to the maximum which could be determined for the particular job in hand.

## Letters to the Editor

### Synthetic Processes.

*To the Editor of THE CHEMICAL AGE.*

SIR.—Your correspondent, who signs himself "Sceptical," has overlooked one important point in denouncing the introduction of new synthetic processes. Has he never heard of "monopolies"? And of restrictions imposed by geographical location? The synthetic ammonia process, for instance, has already served its purpose in crushing Chile's monopoly for the supply of nitrate of soda. People in this country, too, are now no longer dependent upon the Far East or France for their silk, as the artificial cellulose product is serving them admirably well in the absence of any method for making a true protein fibre. In both cases the chemists' efforts have been assisting industry's endeavour to rid itself of monopolies created by restrictions in the geographical distribution of conventional raw materials. So, too, it has been in the case of rubber. The world gets its rubber from a limited number of points in the tropics, and it was only under the pressure of war conditions that Germany seriously turned her attention to the possibility of producing a synthetic rubber. Turning to the beet sugar industry, was not Napoleon's efforts to stimulate beet growing in Europe entirely due to his desire to break the then-existing sugar monopoly? And to-day the synthesis of sugar from cellulose is being seriously considered in certain beet-growing countries in order to release the soil for other and more immediate purposes. So long as there is any desire to attain industrial independence among the nations of the world the introduction of new synthetic processes will continue to be stimulated.—Yours faithfully,

"SYNTHESIS."

### Why Not British?

*To the Editor of THE CHEMICAL AGE.*

SIR.—More creosote is being produced in this country than the timber and other creosote using trades can at present absorb, and the producers are therefore engaging in a campaign to persuade us to use more in order to bring the demand more into line with the supply. With this end in view they showed an excellent propaganda film in London the other day, demonstrating the devastating effects of vegetable and animal attacks upon untreated timbers and the preservative effect of treating the timber with creosote of varying strengths.

One is not unfamiliar with the foreign character of many of the films shown at the ordinary cinemas, but when one witnesses an instructional film exhibited for the sole purpose of stimulating a purely British industry, one scarcely expects to see a Continental production. All honour to the Continental creosote committee for its enterprise in producing a film of this character, but I would venture to suggest that it would have been more to the credit of the home industry if it could have brought its object lessons a little nearer home. We have a good deal to learn from our Continental friends, but to show us exclusively what they are doing seems to suggest that there is something lacking in Great Britain. Why not follow the film up with pictorial evidence of creosote activities in the British Isles?—Yours faithfully,

"BUY BRITISH."

### Use for American Pine Oil exploited in Germany

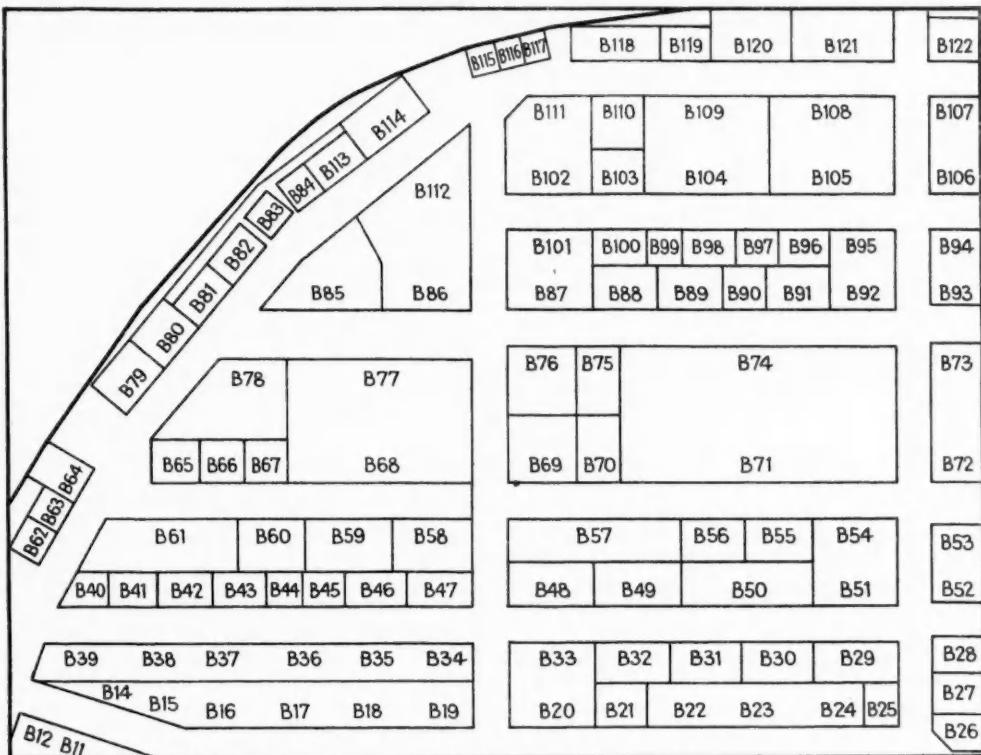
GERMANY, as one of the most highly industrialised nations of the world, is offering a particularly fertile market for the sale of pine oil. It is only recently that German industries and chemists have become aware of the increasing uses to which this commodity can be placed. Pine oil is used primarily in Germany as an emulsifying agent, solvent and source of terpineol and terpene hydrate. Its utilisation as a deodorant, germicide, insecticide and denaturant is not as important proportionally, as in the United States. Increased demand for the product should come from the German lead and zinc mines for use as a flotation agent; from the soap industry, and from textile plants for washing textiles. The use of the oil as a solvent for nitrocellulose and as an addition to spinning solutions is of only recent application in Germany. Greater production by German manufacturers of disinfectants, rubber, lacquers, dyes and artificial silk offer excellent opportunities for expanding sales of the oil.

## British Overseas Chemical Trade in January

### General Decrease in Exports, Imports and Re-Exports

*Exports of chemicals, drugs, dyes and colours during January amounted to a total of £1,430,406 which is £277,040 lower than the figures for January, 1931. Imports totalling £803,643 were lower by £170,015, and re-exports totalling £50,957 were lower by £2,299, as compared with January, 1931.*

	Quantities Month ended January 31. 1931	Value Month ended January 31. 1932	Quantities Month ended January 31. 1931	Value Month ended, January 31. 1931	Quantities Month ended, January 31. 1932	Value Month ended, January 31. 1931
<b>Imports</b>						
Acetic Anhydride .. cwt.	214	394	£	£	2,320	2,940
Acid, Acetic .. tons	137	1,139	4,556	40,130	31,913	30,419
Acid, Tartaric, including Tartrates .. cwt.	3,267	1,197	10,564	2,888	5,543	2,450
Bleaching materials ..	3,977	7,886	9,336	17,563	2,896	15,425
Borax .. ..	20,620	20,731	11,946	11,317		
Calcium Carbide .. ..	77,990	72,073	47,311	47,403		
Coal Tar products, not elsewhere specified value	—	—	15,176	804	777	692
Glycerine, Crude .. cwt.	1,056	162	1,631	210	6,746	4,697
Glycerine, Distilled ..	1,414	530	3,083	1,064		
Red Lead and Orange Lead .. cwt.	2,112	2,973	2,997	4,361	375,223	390,092
Nickel Oxide .. ..	100	100	580	582	161,905	139,333
Potassium Nitrate (Salt-petre) .. cwt.	6,469	9,187	5,784	8,074		
Other Potassium Compounds .. .. cwt.	191,756	88,536	67,961	42,469	3,179	2,333
Sodium Nitrate .. ..	118,192	62,600	51,830	20,863	53,142	11,442
Other Sodium Compounds .. cwt.	31,586	30,667	19,563	24,524		
Tartar, Cream of .. ..	3,525	865	14,629	3,557	39,044	168,845
Zinc Oxide .. tons	670	136	16,745	3,099	255	659
Other chemical manufacturers .. .. value	—	—	222,657	167,785		
Quinine and Quinine Salts oz.	48,928	69,549	3,311	6,993	83,348	79,087
Bark Cinchona (Bark Peruvian, etc.) .. cwt.	228	218	533	1,058		
Other drugs .. .. value	—	—	131,037	97,174	—	—
Intermediate Coal Tar Products .. cwt.	25	41	391	546	222,768	216,857
Alizarine and Alizarine Red .. .. cwt.	28	—	999	—		
Indigo, Synthetic .. ..	—	—	—	—	83,348	79,087
Other Dyestuffs .. ..	3,813	4,020	88,375	96,861	10,848	10,150
Cutch .. ..	2,689	909	4,945	1,171	6,200	13,389
Other extracts for dyeing .. cwt.	3,560	3,888	9,608	13,204	1,958	5,326
Indigo Natural .. ..	16	—	412	—	1,958	5,326
Extracts for Tanning .. ..	82,529	92,236	76,892	75,246	1,958	5,326
Barytes, Ground .. ..	35,946	23,842	7,168	4,525	1,958	5,326
White Lead (dry) .. ..	10,932	9,430	16,442	13,514	1,958	5,326
Other painters' colours and materials .. cwt.	99,271	64,161	120,438	95,482		
<b>TOTAL .. value</b>	—	—	973,658	803,643	<b>TOTAL .. value</b>	<b>1,707,446 1,430,406</b>
<b>Exports</b>						
Acid, Sulphuric .. cwt.	2,255	10,718	2,426	4,458		
Acid, Tartaric, including Tartrates .. cwt.	1,225	1,221	6,670	5,234		
Ammonium Chloride (Muriate) .. tons	352	558	5,991	9,591		
Ammonium Sulphate .. ..	56,590	23,915	404,714	126,279		
Bleaching Powder (Chloride of Lime) .. ..	32,281	29,548	9,415	9,555		
COAL TAR PRODUCTS Anthracene .. cwt.	—	—	—	—		
Benzol and Toluol galls.	6,437	1,067	625	133		
Carbolic Acid (crude) ..	8,252 gals.	5,731 gals.	1,152	627		
Carbolic Acid (crystals) .. cwt.	935	866	2,682	2,293		
Cresylic Acid .. galls.	115,674	94,368	12,362	10,266		
Naphtha .. ..	4,681	2,139	501	234		
Naphthalene (excluding Naphthalene Oil) cwt.	9,756	6,930	2,538	2,504		
Tar Oil, Creosote Oil, etc. .. .. galls.	2,503,168	1,369,705	59,234	30,816		
Other sorts .. cwt.	6,980	15,449	5,376	6,881		
Total Coal Tar Products	—	—	84,530	53,754	<b>TOTAL .. value</b>	<b>53,256 50,957</b>
<b>Re-Exports</b>						
Acid, Tartaric, including Tartrates .. cwt.	—	158	93	827	£	521
Borax .. .. ..	—	1,215	440	613		352
Coal Tar products not elsewhere specified value	—	—	—	—		15
Potassium Nitrate (Salt-petre) .. .. cwt.	—	106	35	176		57
Sodium Nitrate .. ..	—	22	537	16		230
Tartar, Cream of .. ..	—	247	220	1,237		1,037
Other chemical manufacturers .. .. value	—	—	—	9,322		11,063
Quinine and Quinine Salts oz.	12,836	24,184	—	—		2,591
Bark Cinchona (Bark Peruvian, etc.) .. cwt.	—	176	230	1,015		2,150
Other drugs .. .. value	—	—	—	31,115		28,424
Cutch .. .. cwt.	767	184	—	1,241		331
Other extracts for dyeing .. cwt.	96	68	454	—		347
Indigo, natural .. ..	—	4	—	96		—
Extracts for tanning .. ..	2,290	1,745	2,530	1,967		
Painters' colours and materials .. .. cwt.	1,113	1,236	2,939	1,745		



## The British Industries Fair of 1932

### A Guide to the Chemical Section

THE eighteenth British Industries Fair will be opened in London and Birmingham on Monday next, and will be the largest and most representative yet held. The Chemical Section, occupying 9,000 square feet, will again be included amongst the lighter trades and Empire exhibits at Olympia, and will be staged in the Grand Hall. Textiles and clothing will be shown at the White City, and the heavy industries at Castle Bromwich, Birmingham. The Fair at Olympia will close on March 3, at Castle Bromwich on March 4, and at the White City on March 5. Above we give a plan of the Chemical Section and below a list of the chemical exhibitors.

STAND NO.	STAND NO.
Albright and Wilson, Ltd., Oldbury, Birmingham ..... B.104; B.109	Johnson and Sons (Manufacturing Chemists), Ltd., Hendon, London ..... B.76
Aquamellis Engineering Co., Ltd., Kingsley Road, Hounslow ..... B.60	Kaputine General Syndicate, Ltd., Lilley Street, Manchester ..... B.87; B.101
Association of British Chemical Manufacturers, 166 Piccadilly, London ..... B.89	Kelacoma, Ltd., Broadwater Road, Welwyn ..... B.57
Bakelite Ltd., Victoria Street, London ... A.87; A.108; B.52; B.53	May and Baker, Ltd., Battersea, London ..... A.147; A.171
Bellchambers Glass Bottle Co., Ltd., Belmont Works, Highbury London ..... B.40	Thomas Morson and Son, Ltd., Gray's Inn Road, London ... B.01
A. Boake, Roberts and Co., Ltd., Carpenters Road, Stratford, London ..... B.105; B.108	Newton, Chambers and Co., Ltd., Sheffield ..... B.110
British Industrial Solvents, Ltd., Kinnaird House, Pall Mall East, London ..... B.122	Potter and Moore, Ltd., Lavender House, London ..... B.75
British Plastic Moulding Trade Association, Ludgate Hill, London ..... B.27	Reeves and Sons, Ltd., Cheapside, London ..... G.4; B.100
W. J. Bush and Co., Ltd., Ash Grove, Hackney, London ..... A.112; A.146; B.93; B.94	St. Albans Moulding Co., Ltd., Sphere Works, St. Albans ... B.26
F. C. Calvert and Co., Ltd., Manchester ..... B.118	Francis Shaw and Co., Ltd., Corbett Street Ironworks, Manchester ..... B.40
T. B. Ford, Ltd., Snakeley Paper Mills, Loudwater, High Wycombe ..... G.21	Shawinigan, Ltd., Marlow House, Lloyds Avenue, London ..... B.60
F. Hulse and Co., Ltd., Woodlesford, Leeds ..... B.113	Society of Chemical Industry, Finsbury Square, London ..... B.103
The Gas Light and Coke Co., Dauntsey House, Frederick's Place, Old Jewry, London ..... B.106; B.107	South Metropolitan Gas Company, Old Kent Road, London ..... B.72; B.73
General Chemical and Pharmaceutical Co., Ltd., Judges Works, Sudbury, Middlesex ..... B.90	Spencer Chapman and Messel, Ltd., Walsingham House, Seething Lane, London ..... B.07
Glovers Chemicals, Ltd., Wortley Low Mills, Wortley, Leeds ..... B.34	Stanform, Ltd., Carnwath Road, Fulham, London ..... A.107
High Speed Alloys, Ltd., Dittom Road, Widnes ..... B.99	Thomas Tyrer and Co., Ltd., Stirling Chemical Works, Stratford, London ..... B.121
Hopkin and Williams, Ltd., Cross Street, Hatton Garden, London ..... A.110	United Ebonite Manufacturers, Ltd., Chadwell Heath, Essex ..... B.55
Howards and Sons, Ltd., Ilford ..... A.109	Viscose Development Co., Ltd., Woldham Road, Bromley, Kent ..... B.119
Imperial Chemical Industries, Ltd., Imperial Chemical House, Millbank, London ..... B.71; B.74	W. A. Webb and Co., Ltd., Skinner Street, London ..... B.08
Insulators, Ltd., Montague Road, Edmonton ..... B.31	Whiffen and Sons, Ltd., Carnwath Road, Fulham, London ... A.107
	Williams (Hounslow), Ltd., Hounslow, Middlesex ..... B.92; B.95
	Benn Brothers, Ltd., proprietors of THE CHEMICAL AGE and other technical journals, are showing at Stand No. A.78 at Olympia, and at Stand No. 7G/1 at Birmingham, where inquiries will be welcomed.

## Chemicals at the British Industries Fair

### Increased Interest in British Products

THIS year's British Industries Fair which opens at Olympia and the White City (London) and at Castle Bromwich (Birmingham) on Monday next will be the most important that has ever been held. Our depreciated currency, coupled with the intensive "Buy British" campaign of the past few months, is already leading to a greatly increased demand for British goods, both at home and abroad. This is particularly true in the case of chemicals. The steady stream of inquiries which have been received during the past few months by the Association of British Chemical Manufacturers from practically every quarter of the globe is proof of the increased interest which foreign traders are now taking in British products. The present position must be utilised to the full. We have an unrivalled opportunity of getting into new markets. Once we get a footing, we have every confidence that the quality and variety of our goods and our established reputation for fair dealing will enable us to hold these new markets even when the financial inducement offered by our depreciated currency no longer exists. The exhibitors in the Chemical Section may confidently count on a good attendance of foreign buyers who have unfortunately been only too few in the past.

The Chemical Section, which has, as usual, been organised by the Association of British Chemical Manufacturers, will again afford a striking demonstration of the strong position held by the British Chemical Industry. Fine chemicals will be particularly well represented. The Association will have an office on stand No. B.89, where literature will be distributed and inquiries answered as to sources of supply. The literature will include the Association's main Directory, covering all the products of its members, in six languages (English, French, German, Italian, Spanish and Portuguese) and the Directory of British Fine Chemicals, which will indicate the manufacturers of over 3,000 fine chemicals in general use. The Directory of the British Chemical Plant Manufacturers' Association, an affiliated organisation, will also be available for those interested in the purchase of the plant and equipment used in a wide range of industries. Information regarding the services rendered to the chemical industry by the Association will also be available with samples of its regular publications, such as its monthly summary of chemical trade, its safety circulars and its quarterly safety summary. Inquirers seeking information before and after the Fair are invited to apply to the main office of the Association at 166 Piccadilly, London, W.1.

#### Some New Products

Attention is drawn to products which have been made in this country for the first time during the past year and are now available for display. Broadly speaking, new products may be divided into two classes, namely (a) those of well known and proved utility which are now being made either for the first time in this country, or by some entirely new process (of this class, synthetic methyl alcohol and acetic acid are typical of large scale developments of prime importance which have occurred in the past few years); (b) those which have only recently been discovered and of which the full range of uses is still under investigation. Products of the latter class are likely to be made on a comparatively small scale for the first few years and their bulk production will obviously depend on the success which attends the efforts of the manufacturer to find outlets for them either in replacements of existing materials over which they show some advantage, or for entirely new purposes which owe their inception to the special properties of the products.

New substances in this class should therefore be of special interest to all users of chemicals. The Association intends in future to make a special feature of new products and will be glad to co-operate with users who may be in search of novelties.

#### Empire Bromides

A special display of bromine and bromides from Empire sources will be made on the Association's stand. In the past there has been no source of bromine within the Empire. German bromine has held the monopoly for a great number

of years and has completely controlled values in the British market. This monopoly has placed British bromide makers in a difficult competitive position, in spite of the protection afforded to these products by the Key Industry Duty under the Safeguarding of Industries Act, and they have had to struggle against foreign bromides based on cheap bromine which was not available to them. The new development of the salt resources of the Dead Sea has placed the supply of Empire bromine at the disposal of the British maker and at last "all-British bromides" are available for those who support the "Buy British" campaign. The Palestine bromine is of a higher standard of purity than the foreign product and this is a praiseworthy achievement for an industry which is yet only in its infancy. The foreign bromide makers realise how serious is this attack on their old monopoly and they are now using every means of retaining their hold on the British market. This they are attempting to do by dumping bromides here at prices far lower than those ruling in the country of origin. The provisions of the Safeguarding of Industry Act are inadequate to deal with this dumping. The British makers are putting up a splendid fight and have every confidence that with the support of British users they will be able to re-conquer and hold the home bromide market. Only the three most important bromides, namely the sodium, potassium and ammonium salts of which the main British makers are Howards, May and Baker, and Whiffen and Sons, will be shown in the Association's exhibit, but a wide range of other bromine derivatives based on Palestine bromine will be found on the stand of Whiffen and Sons.

#### Chlorquinol

This product, shown by Johnson and Sons (Manufacturing Chemists) Ltd., is a new developing agent to replace the foreign product "Adurol." It can be used with the present day chloro-bromide photographic papers for obtaining specially warm tones, also with metol as a substitute for the usual metol-hydroquinone developer. It is a white crystalline powder which dissolves readily in water. As compared with hydroquinone it keeps better in solution, is more energetic in action, gives density more readily and is less sensitive to changes of temperature.

Lactic acid B.P., shown by Howards and Sons, Ltd., is now being made in this country for the first time, and as a result the temporary exemption from Key Industry Duty has been withdrawn. This firm is showing a whole series of lactic acid derivatives of which some have been put into production during the present year.

A. Boake Roberts and Company, Ltd., are showing a number of new metallic soaps for use as driers in the paint and printing trades and these include nickel resinate, nickel linoleate, potassium linoleate, sodium resinate, triethanolamine oleate, vanadium resinate, titanium stearate and potassium stearate.

A number of new solvents and plasticisers for use in the cellulose, lacquer and allied industries have been produced by A. Boake Roberts and Co., of which the following deserve special mention:—ethyl glycol phthalate, butyl glycol phthalate, cresyl glyceryl ether, mono-cresyl glyceryl diacetate, mono-cresyl glyceryl mono-acetate, glyceryl diacetate benzene and glyceryl diacetate phenyl acetate. Other products of this type are at present undergoing extended tests and may later become of as great importance as products at present in use, such as tricresyl phosphate and dibutyl phthalate.

#### Perfumery Chemicals

A number of new perfumery chemicals produced by A. Boake Roberts and Co., Ltd., for use in the manufacture of toilet soap and perfumery will include benzyl cresol, musk ambrette, musk civette, cedrol and tri-chlormethyl phenyl carbonyl acetate. Special attention is drawn to musk ambrette which in the past came practically entirely from abroad, and of which the firm are the only manufacturers in this country. Musk civette has only just been discovered and is now undergoing trials, but it is expected to prove of great value to the toilet soap maker and perfumer.

Whiffen and Sons are exhibiting the hydrochloride sulphate and phosphate of the crystallisable alkaloid "kurchine" obtained from the Indian kurchi bark, which has for long been used by the natives in the Congo district as a treatment for dysentery. The hydrochloride is the most soluble of these salts and is therefore suitable for hypodermic injection or for oral administration. The double salt of bismuth and iodine with "kurchine" is being prepared and also the bismuth iodide of the total alkaloids from kurchi bark. The latter has already been introduced into India under the trade name of "kurchinetum bismuth iodide."

During the past year Imperial Chemical Industries, Ltd., have produced some 200 new dyes and related products many of which are of outstanding importance. The dye industry is making remarkable progress thanks to the Dyestuffs (Import Regulation) Act, and is not only filling up gaps, but is steadily extending the range of available products. Thus our dependence on foreign dyes is being steadily and surely reduced till now less than 10 per cent. by weight of our requirements have to be obtained from abroad.

#### Research Chemicals

A large number of new fine chemicals have been produced for use in organic research and chemical synthesis, of which the following might be mentioned:—methyl-*p*-toluidine, methylene sulphate for the methylation of dihydroxy compounds, and the sodium salt of 6-chloro-5-nitro-toluene-3-sulphonic acid, a special re-agent for the precipitation and estimation of potassium, and a useful alternative to the classical but expensive platinic chloride reagent. These have been produced by the General Chemical and Pharmaceutical Co.

Hopkins and Williams, Ltd., are showing 1,4-dimethyl-anthraquinone; *p*-nitrophenylacetic acid; *p*-nitrobenzyl cyanide; *p*-nitrobenzene-azo-resorcinol, a sensitive re-agent for the detection of small amounts of magnesium, sometimes met with under the name of magneson; 2,4-dinitrophenylhydrazine, a trustworthy re-agent for the characterisation of aliphatic and aromatic aldehydes and ketones (the compound itself is stable and the dinitrophenylhydrazone may in many cases be prepared in a few minutes).

Hopkin and Williams, Ltd., are showing sodium orthovanadate, a reagent for the diagnosis of certain pathological states, for which purity and correctness of composition are essential. The compound is specially made to meet these requirements.

Howard and Sons are showing the stereo-isomers of optically inactive menthol, namely, *dl*-isomenthol and *dl*-neomenthol; the resolution of the optically inactive body has so far been effected only on a laboratory scale, but it could be commercialised at short notice if necessary. These products may be of interest in connection with the requirements of the British Pharmacopœia.

Imperial Chemical Industries are exhibiting sodium carbonate, sodium pyrosulphate and benzyl cellulose.

#### The "Buy British" Campaign

No general introduction to the Chemical Section of the British Industries Fair would be adequate without some reference to certain well-established lines, the home production of which deserves particularly recognition in connection with the call to "Buy British." Many items have been bought from abroad during recent years, to an extent which is out of all keeping with a comparison of the relative merits of home and foreign manufacturers. Aspirin, for example, is manufactured and sold in this country in quantities far larger than the imports, at prices competitive with them and in grades as high. The imports consist largely of material which is not of as good quality as British makes, and if any grades equivalent to the British are imported, it is only to serve a demand for "branded names" rather than for quality.

Isopropyl alcohol, vanillin, methyl salicylate, cinnamic aldehyde, coumarin, geraniol, hydroxycitronellal, linalyl acetate and phenyl ethyl alcohol may well be considered as a group of products each characterised by a distinctive odour or flavour, which makes them indispensable in modern perfumery manufacture and flavouring essence compounding. In this field, British manufacturers have proved repeatedly their ability not only to meet the foreign manufacturer in

effective competition, but also in quality of material and range of products.

#### Medicinal Chemicals

Methyl salicylate and sodium salicylate must be mentioned also in relation to their medicinal value in the treatment of muscular and articular rheumatism, where they have established a considerable reputation. From this we might pass to the mention of medicinals generally and potassium iodide in particular. British makes are available to meet the demand which, if it fails to arise out of patriotic appeal, is certain to develop on favourable price comparisons. Other medicinals calling for special mention include paraldehyde which as a sedative and hypnotic is supplied in British B.P. quality both rectally and intravenously; calcium lactate, the most popular and efficacious calcium salt for treatment of urticaria, eczema, pruritis, etc.; metol, used in pharmacy as well as in photography; phenolphthalein, which has grown to be the most popular synthetic chemical for use as an internal purgative; and thymol, which has become a widely used disinfectant in tooth-pastes and as a mouth wash.

Mention should also be made of a group of products essentially fine chemicals in nature and grade, but used primarily in industry. It includes lactic acid, largely used in the brewery trade and in foodstuffs manufacture; cadmium compounds, notably the oxide and sulphide, used in ceramics, glass and rubber manufacture; chromic acid, almost all the production of which is absorbed in the electro-plating industry; ethyl lactate, used to a considerable extent nowadays in varnishes and lacquers for car finishes and in leather finishes; and sodium benzoate, a foodstuffs preservative, the use of which has been developing rapidly in this country.

These items have been instanced particularly as representative of a group which, having regard to the adequate availability of British supplies of the right grade and at the right price, have been purchased from abroad to an appreciable and unnecessary extent. This is due almost entirely to one of three reasons. The first is ignorance as to the availability of British supplies; on this point we can only say that the Association of British Chemical Manufacturers has distributed gratis some 3,500 copies of the current edition of its directories, and that supplies are still available gratis on request. Secondly, it has become apparent that the responsible officials of British companies (whose policy to buy British is almost a foregone conclusion if it has not already been admitted) are frequently ignorant of the fact that that policy is lost—for one reason or another—on their purchasing departments; and thirdly, there is the practice of specifying branded goods without considering whether it be justifiable or, for that matter, the most satisfactory policy from a purely personal point of view. These latter two aspects must inevitably be left for the purchaser to consider, with the reminder that he is urged to buy British, not only because it is nationally preferable, but also because British goods are best and are right as to price, grade for grade.

#### Finding New Outlets for Creosote

##### The Influence of the Film

With a view to arousing a more widespread interest in the utilisation of creosote, the National Creosote Committee of the Association of Tar Distillers entertained a large number of users and potential users at an exhibition of a film dealing with its advantages at the R. C. A. Theatre, Film House, Wardour Street, London, on February 12. The creosote producers in this country, in common with those in other parts of the world, have for some time been confronted with the fact that the production of creosote exceeds the present demand. The problem of finding fresh outlets is therefore an important one for the British industry, and the producers have been supporting the National Creosote Committee with that object in view.

The film shown in London was produced by the Continental Committee, and it deals in detailed manner with the various aspects of forestry in many parts of Europe, the enemies of wood, the manufacture of creosote and the uses of creosote in wood preservation. It shows the effect of chemicals of various toxicity upon insects and fungi, gives diagrams of comparative costs of treated and untreated railway sleepers and shows some instructive scenes of tar distilleries.

## Notes on the Exhibits at Olympia

### The Chemical Industry Stands

*The following notes on the stands in the Chemical Section of the British Industries Fair at Olympia, most of which have been supplied by the courtesy of the Association of British Chemical Manufacturers, serve to indicate the close connection between the chemical industry and the necessities and luxuries of modern life.*

#### Albright and Wilson, Ltd.

This firm, well known for the manufacture of fine chemicals, is again showing a comprehensive display of phosphorus and its derivatives, which includes B.P. and technical grades of phosphoric acid, phosphorus oxychloride, tri-chloride and pentachloride; sodium and calcium phosphates of the high standard of purity required for their use as aerating materials in the baking and milling trades; and ammonium phosphate and magnesium ammonium phosphate. They have also introduced several new lines, including trisodium phosphate of a double strength, containing approximately 90 per cent.  $\text{Na}_3\text{PO}_4$ , as well as the ordinary commercial grade of this salt. Exhibited at this stand are also a number of other preparations of a high degree of purity, including medicinal and 99.97 per cent. carbon tetrachloride, hypophosphites, glycerophosphates, and precipitated sulphur. Silicon ester, and preparations derived from this material, manufactured only by this firm, are shown in many forms for the preservation of stone and for the painting of concrete. Special attention is drawn to silicon ester mortars which are made from silica and a silicon ester medium; these mortars resist attack by ordinary acids, and their high compression strength is demonstrated in an interesting manner.

#### A. Boake Roberts and Co. Ltd.

In fine chemicals, essential oils, terpeneless oils, and intermediates there is a varied range of products exhibited at this stand. Among the technical chemicals there is liquid sulphur dioxide in glass siphons, tins and iron cylinders; sulphites, hyposulphites, bisulphites, and metabisulphites, phosphates, saponines, and sulphonated oils. A wide variety of solvents, plasticisers, gums and resins used in the preparation of cellulose nitrate and cellulose acetate lacquers, plastics and moulded products in the paint and varnish trades and in printing inks is also exhibited. A. Boake Roberts and Co., Ltd., have recently carried out much research work on the subject of plasticisers, and will be showing as a result, a range of "Abracols" recommended as plasticisers in special instances. These are chiefly bodies of very complex composition and they possess properties that render them particularly valuable for use in either cellulose nitrate or cellulose acetate products. Driers and metallic soaps, including oleates, stearates, linoleates, tungates, palmitates and resinates, containing a definite metal content will also be shown, as well as Shawinigan acetic acid of all grades and strength and carbon black. Among the products at this stand there will be many which are being shown for the first time, particularly amongst fine chemicals, plasticisers and metallic soaps, in each group of which the research work, which of recent years has been so important a point in the firm's programme, has continued.

#### British Industrial Solvents, Ltd.

The products shown by British Industrial Solvents, Ltd., are without exception, alcohol derivatives. Ethyl alcohol, which is by far the most important, is the sole raw material (apart from catalysts) used in the manufacture of acetaldehyde, acetaldol, acetic acid, acetone, butyl alcohol, butyl aldehyde, butyl acetate, crotonaldehyde, diacetone alcohol, ethyl acetate, hydracetyl acetone, isopropyl alcohol, isopropyl acetate, mesityl oxide, paraaldehyde and paradol. An extensive range of esters—acetates, formates, lactates, oleates, oxalates, phthalates, propionates, salicylates, stearates—is also produced. The equipment of British Industrial Solvents, Ltd., provides for the production of acetic acid, acetone, normal butyl alcohol, and mixed esters, in very large quantities, and the company can easily expand its productive capacity should trade requirements warrant it.

#### W. J. Bush and Co. Ltd.

This firm is showing a complete series of flavour essences suitable for all purposes and, in addition, is exhibiting a re-

markable range of fine chemicals, essential oils, isolates, floral concretes and absolutes. Their latest productions include phenyl ethyl alcohol, amyl cinnamic alcohol and citronellol from citronella in company with vanillin, coumarin, heliotropine, terpineol, ionone and other products. There is a full range of essential oils and terpeneless oils and of isolates such as geraniol, anethol, eugenol, carvone, isoeugenol, etc. As examples of intermediates in the aniline dye and other trades there are aceto acetic ether, oxalacetic ether, malonic ester, sulphanilic acid, phenylhydrazine sulphonic acid, salicylic acid and salicylates, benzoic acid and sodium benzoates, benzyl chloride and derivatives, benzoyl chloride and many others. Of interest is also a range of harmless food colours for all purposes. Cream of tartar, one of the products of the firm's Widnes works, is also shown.

#### T. B. Ford, Ltd.

T. B. Ford, Ltd., in conjunction with their agents, Alfred K. Wright & Co., of 14 Chapel Street, Milton Street, London, E.C.2., are exhibiting their range of filter papers in sheets and circles of various sizes, and in white, grey and pink colours, also filter pulp with and without asbestos in cake, loose or powdered form, the latter being a new prepared filtering medium known as "Ford's powdered filter cellulose." For the first time, they are also exhibiting a special long fibred filter pulp with and without asbestos, which is particularly suitable for brewers of beer, cider and vinegar, etc., and other manufacturers requiring a pulp of this nature. These papers and pulps have been produced after careful study of the particular requirements of all trades requiring reliable filtering media. For analytical, quantitative, qualitative and pharmaceutical purposes in laboratories and schools, this mill provides four high grade filter papers of a low ash weight, and a perfectly level sheet of equal filtering power all over.

#### Gas Light and Coke Co.

This company is exhibiting a large number of by-products, including coal tar pitch of various grades for briquetting, road work and general purposes; creosote which is chiefly employed in the pickling of timber; road tar and tar-bitumen compounds of absolutely reliable standard, also a tar emulsion for cold application. Special facilities are offered in the matter of deliveries and also for spraying from modern road tanks. The benzol products shown include motor spirit, pure toluene, solvents, high-flash naphtha and xylenes. Crystal carbolic acid is manufactured for use in the preparation of explosives, synthetic resins and for medicinal purposes. Cresol testing 99/100 per cent., and giving a clear solution in caustic soda is also shown. Among the remaining exhibits may be mentioned anthracene; liquid disinfectants; fuel oil; green oil; sharp oil; black varnish; pyridine bases of various grades; naphthalene in many forms, including a special insecticide grade for horticultural use, also in crude form as used by firelighter manufacturers; sulphuric acid B.O.V.; sulphate of ammonia, neutral quality, guaranteed to contain not less than 21 per cent. of nitrogen; liquid ammonia; spent oxide used by sulphuric acid manufacturers; oil gas tar employed in the making of cheap varnishes, wood preservation, also for fuel purposes and ant repellent oil for the purpose of combating the mealy bug on coffee plantations.

#### General Chemical and Pharmaceutical Co. Ltd.

In previous years the special reagents for the detection and determination of metals in low concentrations included in the Judex exhibit have always attracted particular attention. On this occasion their number has been increased by the addition of sodium 5-nitro-6-chlorotoluene-3-sulphonate and allyl-iodine-hexamine, specific reagents respectively for potassium and cadmium. A simple demonstration of the efficacy and delicacy of the principal Judex special reagents adds to the interest of the display. The usual range of Judex analytical reagents includes this year a special grade of acetic acid, in

which oxidisable impurities have been reduced considerably below the limits of recognised A.R. specifications, while other new products shown are tri-methyl ortho-acetate, N-methyl-*p*-toluidine and its acetyl derivative, and a new grade of basic lead acetate characterised by ready solubility and high clarifying power, which is expected to be of considerable value to those concerned with the clarification of liquors.

#### Glovers (Chemicals) Ltd.

This stand is of unusual interest to the textile and leather trades in view of the range of fabrics, and yarns composed of viscose silk, acetate silk, cotton and wool fibres which have been dyed with the assistance of resistones. These products are the only ones of their kind produced in this country. Resistone O and Resistone OP are mordants for basic colours on cellulose fibres, and by their use, the time required for mordanting is reduced to about one hour, and carried out in one bath. This shows a very considerable saving in time and labour over the older methods of using tannic acid and tartar emetic. Resistone K and Resistone KW are resists for wool against direct cotton colours, and to a large extent prevent the staining of wool fibres when dyeing mixed fabrics of wool and cotton, or wool and viscose. Texogent, a solvent for scouring raw wool, hosiery, woollen and worsted piece goods is also shown. Texogent L is used in the leather trade for increasing pigment penetration.

#### High Speed Steel Alloys, Ltd.

Established on the outbreak of war to secure an adequate supply of tungsten powder for munition purposes, eventually becoming the largest makers in the world of this product, this company is exhibiting examples of commercial and fine chemicals derived from tungsten and two other steel making elements, vanadium and molybdenum. Samples will be shown of sodium, ammonium, calcium and other tungstates, in various qualities ranging from the commercial crystals of the sodium salt to the relatively expensive fluorescent calcium tungstate used in X-ray work. Tungstic oxide is illustrated by specimens of the four grades manufactured by the company; commercial and refined ignited oxides, the hydrated oxide  $H_2WO_4$ , particularly suitable for solution in alkaline liquors; also the chemically pure oxide used for the preparation of the purest tungsten powder; a stage in fabrication of the ductile form of this element. The compounds of vanadium exhibited are various forms of the pentoxide ( $V_2O_5$ ) including the pure and commercial grades in the anhydrous and hydrated condition, and a number of salts of vanadic acid, special attention being given to ammonium metavanadate and sodium orthovanadate which are marketed in several degrees of purity. Molybdenum is represented by specimens of ammonium molybdate as crystals and as powder, sodium molybdate crystallised as  $Na_2MoO_4 \cdot 2H_2O$  and as the anhydrous salt, other molybdates, less in demand than the previous two, are also shown. Molybdic oxide and molybdic acid are made by the company and samples of these compounds are included in the exhibit. In elaboration of the samples of commercial and pure chemicals, and in illustration of the processes of manufacture, specimens of the various ores and intermediates add interest to the display.

#### Hopkin and Williams, Ltd.

This exhibit draws special attention to the company's well-known analytical reagents and to a book published by them giving specifications governing the purity of these reagents. This book is the most complete and up-to-date publication of its kind, describing not only the reagents for general analytical purposes, but also several special organic compounds, and a complete range of chemicals for the preparation of buffer solutions. Standard sets of sealed buffer solutions containing the more generally used indicators are also shown, being part of a comprehensive exhibit of chemicals for the determination of hydrogen concentration. There are also a number of fine organic chemicals such as hippuric and malonic acids, 2:4 dinitro phenylhydrazine (reagents for carbonyl compounds), *p*-nitrocinnamic acid, ethyl *p*-nitrocinnamate, *p*-nitrobenzyl cyanide and *p*-nitrophenylacetic acid. The company specialises also in chemicals for photographic plate, film and paper manufacture, and specimens of ammonium bromide and chrome alum of special grades for these purposes

are exhibited. Sodium uranate (lemon and orange), uranium oxide, uranium nitrate, uranium acetate and other compounds are of special interest to manufacturers of pottery and glass; whilst manganese borate and cobalt acetate are of interest to manufacturers of paint and varnish.

#### Howard and Sons, Ltd.

Established in 1797 by Luke Howard, F.R.S., this firm, under the guidance of successive generations of the founder's descendants, has made steady and continuous progress in the manufacture of fine chemicals, and to-day is known the world over for the excellence of its products. Starting with lactic acid B.P. of which Howards are the only manufacturers in England, they have now produced for the first time sodium lactate, bismuth lactate, zinc lactate, and isopropyl lactate, whilst their calcium lactate and calcium sodium lactate are already well known. Paraldehyde P.B., of entirely English make, menthol (synthetic) and its isomers, isomenthol and neomenthol—the last two produced for the first time in a pure state by any laboratory—are also shown. Other fine pharmaceutical products are quinine, aspirin, iodides, mercurials, thymol, and Epsom and Glauber salts. An activity of the utmost importance at the present time is the manufacture of British industrial solvents, plasticisers, etc., including Sextol, Sextone "B," ethyl lactate, diacetone alcohol, cyclohexane, methylcyclohexanol oxalate, etc. These solvents are now used with great success in the plastic, dyeing, dry-cleaning, laundry, textile, varnish, lacquer, paint and artificial leather trades.

#### Imperial Chemical Industries, Ltd.

The numerous ramifications of this company make it impossible to refer to the wide range of products which it makes, and of which full details will be available on their stand. Attention is therefore concentrated on two new developments of the greatest importance to British industry, namely dyestuffs and a new British plastic material called benzyl cellulose.

Though it is common knowledge that Great Britain has made much progress as a manufacturer of dyestuffs during recent years, especially during 1931, the advance will be shown in a most striking form by an exhibit which will appear on the Imperial Chemical Industries' Stand No. B.71/74. This exhibit will show that, during 1931, no less than 200 new products have been produced by the dyestuffs group of I.C.I. All types of dyestuffs are represented in this range of new products and in view of the present tendency for faster shades, not only on high-class articles but also on materials of moderate quality, it is encouraging to note that manufacturers are fully alive to the requirements of the moment and that of the 200 new dyestuffs, 30 are products which produce shades fully suitable for use in the manufacture of "guaranteed fabrics." The majority of these fast dyestuffs belong to the same family as the Caledon Jade Green, itself an outstanding product due to British research and development.

Benzyl cellulose, the new plastic material, which will be shown at both London and Birmingham branches of the Fair, is prepared by the action of caustic soda and benzyl chloride on cellulose, and its outstanding property is its extraordinary chemical stability. For example, it resists the action of alkalis up to 20 per cent. concentration, is unattacked by sulphuric acid of accumulator strength, and is upwards of specific gravity 1.4. It thus has outstanding advantages over the better-known cellulose acetate. It is thermo-plastic, and can be heated up to 180° D. without fear of decomposition. Like the vest cellulose acetate, it is non-inflammable, and can be worked at high temperatures without danger. Unlike cellulose acetate, nitro-cellulose, etc., it has almost complete resistance to water, its hygroscopicity being 0.5 per cent., as compared with 8-9 per cent. of cellulose acetate. Films and other materials made from benzyl cellulose are thus impermeable to moisture of any kind.

#### Johnson and Sons (Manufacturing Chemists), Ltd.

This firm is exhibiting a very comprehensive series of the "Scales Brand" pharmaceutical, photographic, fine and general chemicals. The pharmaceutical section shows a selection of emulsions, decoctions, infusions, syrups, extracts, tinctures, etc., together with a range of packed counter preparations, such as castor oil, cod liver oil, embrocation, bal-

sams, glycerine and thymol, lysol, and malt extract. Nitrate of silver, for which Johnson and Sons have been famous for well over 50 years, is also shown. The range of photographic chemicals includes Amidol, Metol, acid pyrogallic, hydroquinone, Glycin, paramidophenol, Azol and others.

#### **May and Baker, Ltd.**

This exhibit is truly representative of May and Baker's manufacturing activities and covers a wide field in technical and pharmaceutical products. A special feature is again made of showing the relationship of raw materials to finished products in selected instances. Among the products of technical interest are the extensive range of mercurials, for which this firm has a world-wide reputation, mercuric arsenate and yellow and red oxides of mercury of extra light density and exceptional covering power for anti-fouling paint compositions; mercuric chloride for insecticidal purposes and for use in electric battery manufacture; mercuric sulphocyanide and calomel for pyrotechnics; vermillion for the colour trades, mercuric iodide, etc. Potassium bromide (in graded crystals), sodium bromide and ammonium bromide, made from Empire bromine as raw material, also call for special note. Other products include a range of cadmium salts for the plating industry; cobalt salts for the oil and colour trades; molybdates for the electric lamp and steel industries; special solutions for the polishing of casenoid articles. The medical and pharmaceutical section of the exhibit contain a range of bismuth salts, chloroform, santonin, phenolphthalein and ephedrine and its salts for use as an adjunct to or substitute for adrenaline.

#### **Thomas Morson and Son, Ltd.**

Shelves enclosed in the pillars at this stand display a comprehensive selection of chemicals for pharmaceutical, research, industrial and technical processes. Amongst these will be noticed Morson's soluble "kreosote," a light brown powder, soluble easily in water or syrup, phenolphthalein, and osmo-kaolin. Among other products are iodides, iodoform, and glycerophosphates.

#### **Potter and Moore, Ltd.**

This exhibit is devoted to Potter & Moore's perfumes and toilet specialities, including their famous Mitcham lavender. This perfume is contained in a complete range of beauty preparations comprising face powders, creams, complexion scabs, etc. Mitcham lavender powder-cream is prominently featured.

#### **Reeves and Sons, Ltd.**

Besides their exhibit in the stationery section, Reeves and Sons, Ltd., are showing a range of permanent lake pigments on stand B.100 for use in the manufacture of paints, printing inks, cellulose lacquers and coloured rubber goods. Finished articles may be seen, illustrating the uses of these colours, and especial attention is drawn to the range of madder lakes.

#### **Shawinigan, Ltd.**

The Shawinigan Co. are showing various products manufactured in the synthesis of acetylene, beginning with carbide of calcium to acetaldehyde, acetic acid and glacial acetic acid, crotonaldehyde, fumol, paraldehyde, aldol, etc. Another interesting part of the exhibit comprises new products produced by the company, namely, "Gelva" polyvinyl acetate of high and low viscosities, and "Alvar" vinyl resins. It is believed that these products are destined to take an important part in the future of the lacquer industry, plastic and moulding industry, the manufacture of safety glass adhesives, etc.

#### **South Metropolitan Gas Co.**

A large range of inorganic and organic compounds, resulting from the manufacture and purification of coal gas and the distillation of crude coal tar, is being shown on this stand. Road tars to British Engineering Standard specification; disinfectant fluid, approved by the Ministry of Agriculture; dry and crystalline sulphate of ammonia, guaranteed to contain 25½ per cent. ammonia; light and heavy oils of various grades and characteristics; black varnish for the preservation of outdoor ironwork; creosote; anthracene, naphthalene, pyridine, sulphuric acid of all strengths, and pitch are other exhibits.

#### **Spencer, Chapman and Messel, Ltd.**

This well-known firm is showing acids such as sulphur trioxide, oleum in strengths of 20, 40, 60 and 80 per cent., concentrated sulphuric acid, battery acid, hydrochloric acid and chemically pure nitric acid.

#### **Thomas Tyrer and Co. Ltd.**

This firm is showing the chemicals for which it is well-known in connection with the oil, paint, rubber and perfumery trades. Among the chemicals for the oil and paint trades are aluminium stearate, zinc stearate, resinates, linoleates, cobalt and manganese salts. Those for the rubber trades include zinc sulphide, cadmium sulphide, etc. In connection with the perfume and cosmetic trades are zinc stearate and magnesium stearate. There is also a selection of pharmaceutical chemicals including bismuth carbonate and other bismuth salts, hypophosphites, citrates, scale preparations, analytical reagents and research chemicals.

#### **William A. Webb, Ltd.**

In addition to their usual lines this firm is showing chain action balances for eliminating the use of the rider weight, giving greater speed on weighings, especially with work involving repetition weighings. Another new departure is a balance with air dash fitments, as is also a micro-balance with readings projected on to a ground glass screen. Counter scales, weighing up to 2 lb., made on the latest principles, constructed from drawn metal, eliminating all castings, are another prominent line. These scales are finished in chromium plate, with stainless steel fittings, and mounted on black plate glass slabs. The firm is showing students' balances with agate or steel knife-edges that will compare favourably with Continental instruments for both quality and price. In addition, there is a considerable range of balances, all finished in chromium plate and stainless steel.

#### **Whiffen and Sons, Ltd.**

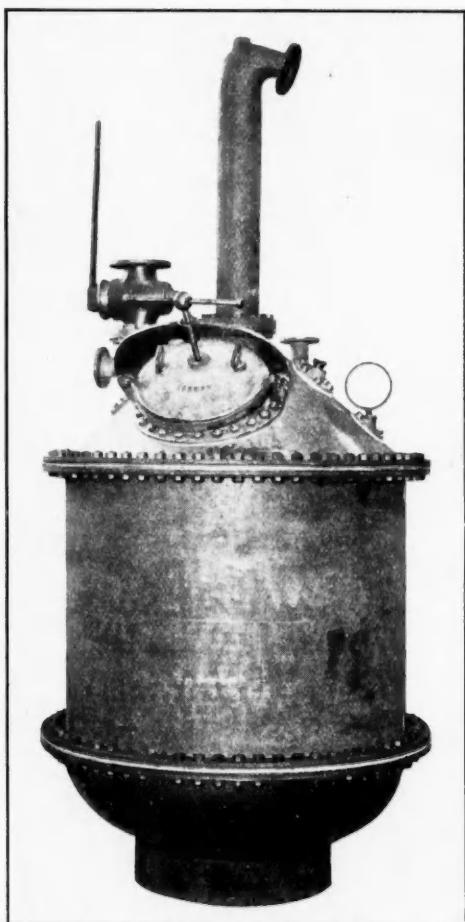
Potassium iodide, which has been a speciality of the firm for nearly 100 years, is exhibited in the purest form commercially obtainable. A number of other important iodine preparations are also exhibited, together with specimens of sodium, potassium, and ammonium bromides in the especially pure form necessary for medicinal purposes, and made from Palestine bromine. Among other pharmaceutical products are caffeine, camphor, clove oil, almond oil, sandalwood oil, and salicin.

#### **Williams (Hounslow), Ltd.**

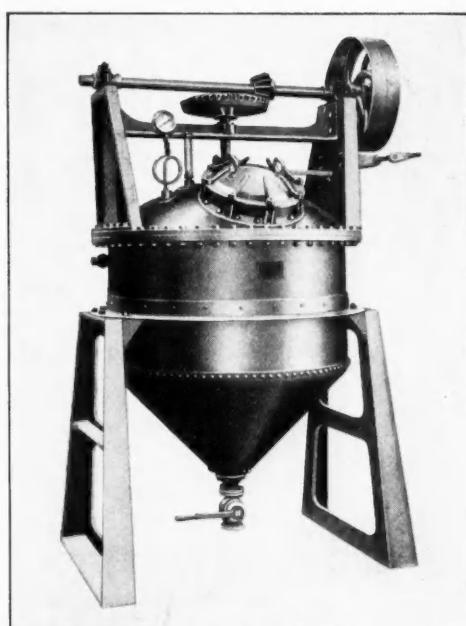
At this stand there is displaying a very wide range of aniline dyes, in crystal and in powder, comprising colours soluble in water, spirit, oil, wax, benzene, naphtha, cellulose lacquer, acetone, etc., etc., and suitable for leather, boot and floor polishes; soap; inks; wood, spirit, and oil varnishes; textiles, horn, ivory, celluloid, etc. In addition to the dyes themselves, exhibit classes of material dyed to show the results produced with the colours, are also exhibited. This section includes leather of various tannages in a variety of shades, and solutions of different colours in varying strengths to show the whole gamut of shades obtainable. Another feature of special interest is the range of guaranteed harmless colours for all classes of confectionery. These colours are guaranteed to conform to all the latest regulations of the Ministry of Health and contain the absolute minimum percentage of metallic salts. There is also a range of nigrosines and indulines, of which Williams of Hounslow are the largest makers in Great Britain.

#### **Bradford Dyers' Association**

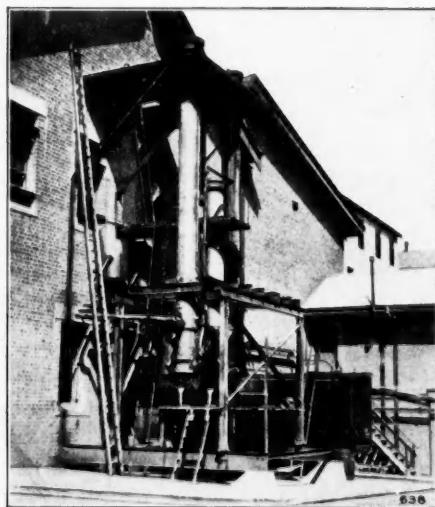
An extraordinary general meeting of shareholders of the Bradford Dyers' Association, Ltd., will be held at the Mechanics' Institute, Bridge Street, Bradford, on February 29, at 12.45 p.m., at which a resolution will be submitted to alter the articles of association. It is stated that under the Companies Act of 1929, directors are empowered to lend money to employees for the purpose of buying shares, and as for many years the association has had an arrangement under which certain directors in their private capacity are responsible for money lent to employees for this purpose, it is the opinion of the Board that this responsibility should now be taken over by the Association.



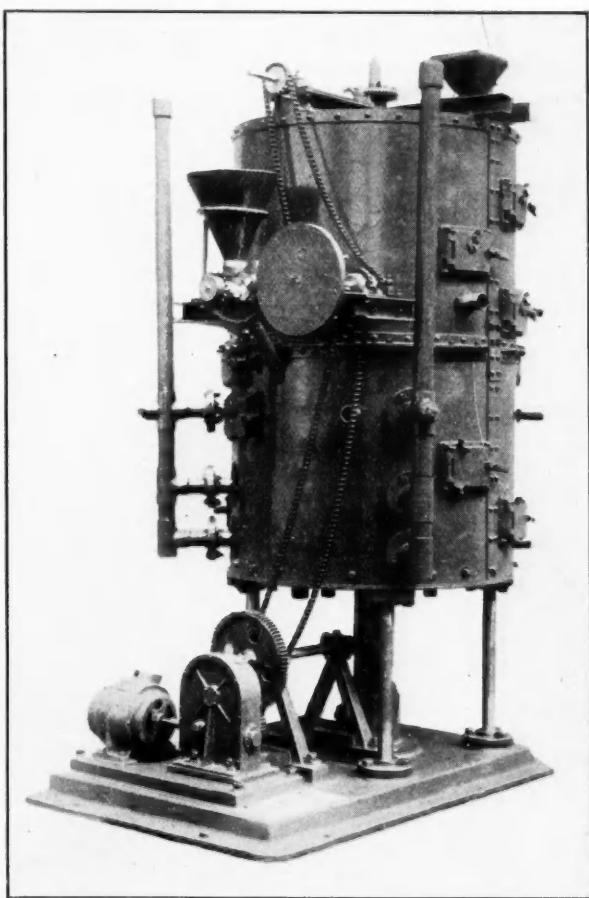
FIRE-HEATED STILL, CONSTRUCTED IN COPPER, FOR USE AT HIGH TEMPERATURE (JOHN DORE AND CO.)



COPPER DIGESTOR WITH AGITATING GEAR, FOR 5 TO 20 LB. PRESSURE (JOHN DORE AND CO.)



PATENT DOUBLE EFFECT EVAPORATOR OF THE CLIMBING AND FALLING FILM TYPE (KESTNER EVAPORATOR AND ENGINEERING CO., LTD.)



EXPERIMENTAL FURNACE FOR THE ROASTING OF COMPLEX ORES (HUNTINGTON, HEBERLEIN AND CO., LTD.)

### Some Examples of Modern British Chemical Plant

## News from the Allied Industries

### **Artificial Silk**

THE BRITISH OUTPUT OF RAYON YARN and waste in December, 1931, was 6,070,000 lb., against 6,260,000 lb. in November, and 3,240,000 lb. in December, 1930. The monthly average production in 1931 was 4,550,000 lb. against 4,060,000 lb. in 1930 and 2,110,000 lb. in 1924.

### **Paper Making**

THE PURCHASE OF THE CAPITAL of Dartford Paper Mills, Ltd., by Wiggins, Teape and Co. (1919), Ltd., has been completed and the mills will carry on business as usual under the management of Mr. Philip T. Goldney.

C. S. OISERMAN, of 119 Queen Victoria Street, London, originally of Manchester, have acquired control of the Gigg Paper Mills at Bury for the manufacture of paper, thus affording new employment for about 200 workpeople.

### **Fertilisers**

THE OFFICIAL PRELIMINARY FIGURES for the consumption of fertiliser in Germany during the year 1930-31 show a decline for all classes. The nitrogen consumption amounted to 345,000 tons (excluding Chilean nitrate), which is a decline of more than 10 per cent. as compared with 1929-30. A stronger decline was registered in phosphorus fertilisers. The consumption of  $P_2O_5$  dropped about 20 per cent. from 548,000 tons to 451,000 tons. The consumption of potash amounted to 700,000 tons of  $K_2O$  as compared with 776,000 tons in the previous year, and 783,000 tons in 1928-29.

### **Plastics Industry**

VISCOUNTESS SNOWDEN was the principal guest at a luncheon given by the British Plastic Moulding Trade Association, in London on February 16. Captain J. W. Barber, who presided, said the luncheon was an event of some national significance. Not only had they in the plastic moulding trade wrested the practical art of moulding from the Americans, but they had left the latter standing at their own game. This industry promised to be the key industry in every one of the basic industries of this country. The exhibit staged for this year's British Industries Fair marked the dawn of a new era in general plastics, which were now colourful, lasting and economical.

### **Paint and Varnish**

RAPID PROGRESS is being made by the Yugoslav paint and varnish industry. At present six large plants manufacture both paints and varnishes. The annual production is estimated at 15,000 metric tons of paints and 2,500 tons of varnishes, or about four-fifths of the domestic consumption. The Government has adopted a strong protective policy in favour of the newly established domestic industry. A large proportion of the requirement is for cold water paints, for interior and exterior walls of houses. Woodwork sometimes is painted with oil or ready-mixed paints; however, the greater part of the paint used is mixed by the local painter. Imports of paints during 1930 were valued at £142,000 and exports at only £1,200. Zinc oxide, lithopone, nitrocellulose lacquers, and ready-mixed paints were the chief items imported.

### **Mineral Oil**

NEW CAPITAL IS REQUIRED by the United British Oilfields of Trinidad, Ltd., for the purposes of repaying loans and providing for the erection of a new refinery and loading facilities. During the past two years loans amounting to about £125,000 have been incurred to enable tests to be made of the company's field and an adequate production to be obtained, while the larger refinery required will cost about £115,000. A sum of £240,000 is required, therefore, and the directors are seeking authority to issue 1,050,000 of the existing unissued shares as 8 per cent. cumulative participating preference shares of 6s. 8d. each. These shares, which will carry the right to one-fourth of the profits which may be distributed in respect of any year after providing for the fixed dividend, are to be offered at par to existing shareholders in the proportion of seven new shares to every ten old shares. The net proceeds of the proposed issue will be about £340,000, so that there will be a balance of approximately £100,000 available for additional working capital. The present refinery was completed in 1915.

### **Matches**

Since 1930 the match industry of Yugoslavia has been controlled by the Swedish Match Syndicate. In 1928 there were five factories in Yugoslavia with a potential output of 300,000,000 boxes; however, the production for that year was reported as 160,239,000, compared with 176,309,000 for 1927. It is stated that in the last few years the consumption of matches has decreased rapidly owing to the import of lighters from abroad.

### **Rubber**

IN VIEW OF THE CONTINUED LOW PRICE OF RUBBER, and the heavy loss on exchange consequent on the Netherlands Government maintaining the gold standard, the directors of New Hayoep Rubber Estates, Ltd., have decided to stop production for the present.

RETURNS ISSUED BY THE RUBBER GROWERS' ASSOCIATION show that the output of 615 rubber-producing companies during January last amounted to 24,003 tons, which compares with 23,357 tons for the preceding month, 23,221 tons for January, 1931, and 25,240 tons for January, 1930.

### **Sugar Industry**

A MEETING CONVENED BY UNOFFICIAL MEMBERS of the Legislative Council, at Port Louis, Mauritius, on February 15, unanimously adopted a resolution for transmission to the Secretary for the Colonies declaring that the population is suffering severely from the "crisis in sugar, the staple industry of the colony," and that no further taxation can be borne so long as the sugar industry continues in such a depressed condition.

THE MINISTRY OF AGRICULTURE point out in a statement that consumption of sugar in this country is 2,000,000 tons per annum. The production of home-grown beet sugar has increased from 13,000 tons in 1923 to 420,000 tons in 1930, involving an expansion of cultivation from 16,000 acres to 340,000 acres. The number of workers in the factories has similarly increased from 1,159 to nearly 10,000, and it is estimated that an additional 30,000 casual workers found employment in the beet fields in 1930.

### **Iron and Steel**

THE WEEKLY IRON MARKET at Birmingham was uneventful. In the absence of any increase in consumption the temperature has not been perceptibly raised by the imminence of a 10 per cent. duty on foreign iron and steel and the possibility of an additional impost in the near future. The home producer is getting no more inquiries, no more orders and no more specifications. Transactions in Continental material do not cover so wide a range of products as formerly. They are not inconsiderable, however. Shipments are being sent forward as quickly as may be to forestall the duty, and these, added to the stocks already in the country, will keep consuming plants here going for some time at the present rate of operation. Moreover, dealings in foreign material are still proceeding. To these the duty will apply, as there is not time to get material rolled, forwarded to ports and thence to its destination before March.

THERE WERE 76 BRITISH FURNACES IN BLAST at the end of January, a net increase of six compared with the number in blast at the end of December. The production of pig-iron in January amounted to 332,400 tons, compared with 330,600 tons in December and 337,200 tons in January, 1931. Production includes 82,400 tons of hematite, 126,900 tons of basic, 103,100 tons of foundry and 12,100 tons of forge pig-iron. The output of steel ingots and castings amounted to 429,700 tons, compared with 425,400 tons in December and 402,200 tons in January, 1931.

NOTICE HAS BEEN GIVEN in the *London Gazette* that a petition for confirmation of the reduction of the capital of the English Steel Corporation, Ltd., from £8,234,889 to £2,862,069 was presented in the High Court during January, and will be heard before Mr. Justice Bennett on Monday, February 22. The English Steel Corporation was registered in 1929 to take over steel and allied businesses of Vickers-Armstrong, Ltd., at Sheffield and Openshaw, and of Cammell, Laird and Co., Ltd., at Sheffield and Penistone. It also controls Darlington Forge, Ltd., and Industrial Steels, Ltd.

## The Case for National Economy

### Statement by the Federation of British Industries

THE Federation of British Industries has submitted to the Government a statement of its views on national economy, in which it points out that industry is inevitably deprived of capital resources by the present drastic demands of the State. There is no encouragement to an investor to put his money into industrial shares if he is to be deprived by taxation of so large a proportion of the proceeds of his enterprise, when successful, while he is left to bear all the risks of failure himself. It must be borne in mind that the profits as shown in a balance sheet of an industrial undertaking are not always represented by cash or liquid assets. Taxation, however, has always to be met by cash payments and very often the whole of the liquid resources of an undertaking are drawn for the purpose of meeting taxation leaving no surplus for the development of a business. The inevitable result is that many British industries at the present time have been unable to maintain their plant and machinery in full efficiency. Their goods therefore are produced at unnecessarily high cost, which prevents their being sold in competition with the products of foreign industries, which suffer from no such disabilities.

The Treasury itself must also suffer ill effects from the high level of taxation, since the proceeds of the taxes have lost their resiliency. While industry is languid, there is not the same profit on which taxes can be levied. The private individual, forced by the demands of the tax collector to make economies, is commonly turning to the lesser luxuries and amusements, which are often the only source from which he can economise. Curtailed expenditure on such items as motor cars, beer and spirits, tobacco, and entertainments means substantially smaller contributions to the Revenue. It must also mean a reduction in employment and profits in the trades affected, so that in some cases it must be questionable whether, when all these factors are taken into account, the increase in taxation can have brought any net gain in revenue.

### Change of Policy Required

It is not possible for the Federation or any unofficial organisation to recommend in detail where economies are to be made. Primarily, expenditure is the result of policy, and for a change of policy the Government alone can be responsible. There would appear to be possibilities of considerable economy if the elaboration of Government administration could be reduced. This arises to a considerable extent from the growing practice of Parliament to empower Ministers of the Crown to legislate by Order or regulation.

Industrialists in order to effect economies in overheads, have been forced to ration drastically their expenditure on overheads, and the Federation has strongly recommended that similar steps should be taken with Government Departments. A definite figure setting out the permissible expenditure should be given to each department and the department's estimates should be prepared for the coming year in a form that will show which of their present services and activities would have to be abolished or curtailed in order that their total expenditure may be brought down to the prescribed amount. This courageous, but disagreeable, course is equally open to Government as it is to local authorities, to commercial enterprises, and individuals.

The position is now so serious that it is useless to plead that taxation cannot be reduced because the commitments of the Government necessitate Budgets of the order of £800,000,000. British industry cannot revive while labouring under this excessive burden of taxation and the benefits of fiscal reform will be lost unless drastic national economies are introduced at the same time.

### New German Detergent

RESEARCH has been in progress for some time in the I.G. laboratories for developing soap-like products of improved properties. Recognising that normal soaps have limitations, especially with regard to solubility, behaviour in hard waters, and detergent power, the first of a series of products offered for industrial and household use is said to have properties which overcome these faults.

## Chemical Matters in Parliament

### Cancer Mortality at Nickel Works

In the House of Commons on Tuesday, February 9, Mr. D. Grenfell asked the Home Secretary whether he has received notification of the deaths from cancer among men employed at the Mond Nickel Works at Clydach, near Swansea; and whether he will state the number of deaths from this cause during the last three years among men who have been employed at these works prior to their disablement?

Sir Herbert Samuel (Home Secretary): At the request of the Department the medical officer of the company has gone through their records and finds that during the last three years six men who had been employed at the works died from cancer, but there does not appear to be any ground in any of these cases for connecting the disease with the employment. The average number of men employed during the three years was 1,105.

### Smokeless Fuel

On Monday, February 15, Mr. J. A. Parkinson (Wigan) asked the First Commissioner of Works if he will consider the desirability of using good quality coal in preference to what is now being used for heating in the libraries and corridors of the House?

Mr. Ormsby-Gore: The present experimental use of smokeless fuel, designed to encourage the use of low temperature carbonisation by-products in Government buildings, was introduced by the late Labour Government. I am satisfied that this smokeless fuel now in use is an efficient heating agent, but I propose to re-examine the whole question at the end of the present heating season.

### Alcohol for Perfumery Trade

On Monday, February 15, Mr. W. L. Everard (Leicester, Melton), asked the Chancellor of the Exchequer the quantities of alcohol used by the perfumery trade for the years 1918, 1929, 1930 and 1931, and the amount of excise duties paid thereon in those years?

Major Elliot: No figures of the kind were collected for the year 1918. For 1929 and 1930 the approximate figures are as follow:

	Proof Gallons.	Excise Duty.
1929	... 60,000 ...	£222,000
1930	... 47,700 ...	£176,000

The figures for 1931 are not yet available.

### Sugar Beet Industry

ON Tuesday, February 16, Mr. G. Price (Hemsworth) asked the Minister of Agriculture the amount of subsidy paid in the beet sugar industry in the twelve months ended December 31, 1931, and what was the quantity of sugar produced, the number of persons employed, and the period in man-weeks for which employment was given.

Sir John Gilmour: The amount of subsidy paid or payable (including the subsidy on molasses manufactured in 1931-32 but not yet delivered) for 1930-31 was £6,140,000, for 1931-32 £2,075,000. The quantity of sugar produced was 8,486,000 cwt., and 5,025,000 cwt.; the number of persons employed in the factories 9,000 and 7,900; the period in man-weeks for which factory employment had been, or is expected to be, given 231,000 and 170,000, respectively. The employment afforded in the production of the 1930 and 1931 sugar beet crops might be estimated at 1,290,000 and 870,000 man-weeks respectively, while the employment indirectly provided in ancillary industries (transport, coal mining, etc.) might be estimated at 550,000 and 370,000 man-weeks in 1930-31 and 1931-32 respectively.

### The Institute of Metals

An innovation in the proceedings of the Institute of Metals is being made by the Council in connection with the forthcoming annual general meeting of the Institute, to be held in London on March 9 and 10. While the ordinary business of the Institute and the reading of papers will occupy the first day and the morning of March 10, the second afternoon's session will be devoted to a general discussion on "The Testing of Castings," which will be opened, with a short paper, by Dr. W. Rosenhain, F.R.S. Visitors are invited to take part in the discussion. Cards of invitation admitting to the meeting may be obtained on application to the Secretary, Mr. G. Shaw Scott, 36 Victoria Street, Westminster, S.W.1.

## From Week to Week

WHITELAW CHEMICAL WORKS, Dunfermline, are for sale.

THE ELEVENTH FARADAY MEDAL of the Institution of Electrical Engineers has been awarded to Sir Oliver Lodge, who is an honorary member of the Institution.

INQUIRIES ARE BEING MADE for a site for a sugar beet factory in Berwickshire. A site area of 40 acres is being sought, with abundant water supply and railway siding facilities.

FOLLOWING THE GOVERNMENT'S TARIFF PROPOSAL, Swiss and English representatives of Nestles, the milk chocolate manufacturers, met Cockermouth (Cumberland) Town Council and landowners and opened negotiations for the purchase of a site to build a new factory estimated to cost over £100,000.

WORK AT THE SANDBACH WORKS of Imperial Chemical Industries, Ltd., is expected to cease on February 26, the Sandbach Council having failed to persuade the directors to reconsider their decision to close the works. About 160 of the 250 employees are to be transferred to Northwich and the remainder will either be pensioned or receive gratuities.

MR. J. LUCK, of Monsanto Chemical Works, Ltd., has recently invented and patented a little novelty in the form of a neat desk blotter which automatically delivers paper clips as required. The loading of the device is a simple operation, and each clip is produced by a sharp turn of a small knob. Many of Mr. Luck's friends in the chemical industry have found the novelty very useful.

AMONG THE NAMES WHICH APPEAR in the list of candidates for election to membership of the Royal Society are Dr. W. E. Curtis, Dr. H. V. A. Briscoe and Sir Richard Redmayne. Dr. Curtis is head of the Physics Department at Armstrong College. He has done a great deal of valuable research into the spectrum of the element helium, in which study he has an international reputation. Dr. Briscoe is the Director of the Department of Chemistry at Armstrong College.

MR. R. H. WHITE, purchasing controller of the Marconi group of companies, will speak on "Specification and Inquiry in Purchasing" at the Central Hall, Westminster, on February 26, at 6 p.m. The meeting has been organised by the British Industrial Purchasing Officers' Association, and Mr. Leonard H. Swinbank, controller of purchases, Imperial Chemical Industries, Ltd., will preside. Cards of invitation may be had from Mr. Stanley Townsend, 51 Palace Street, S.W.1.

GEEVOR TIN MINE, PENDEEN, which had to close down over a year ago due to the low price of tin, resumed operations last week. The price of tin has been rising steadily for some weeks, in consequence of which the few Cornish mines not actually closed down have been able to increase their production, and others are about to re-commence. Captain F. C. Cann, the manager of Geevor mine, states that, unlike some other mines, it has been kept unwatered throughout the whole period of the slump, and that within the next few weeks it is hoped to resume production to the extent of finding employment for approximately 150 miners.

THE SUCCESS OF LOW TEMPERATURE CARBONISATION processes that have been in operation for some time in South Yorkshire was demonstrated at Sheffield, on Monday, February 15, by Colonel A. W. Bristow, chairman and managing director of the Low Temperature Carbonisation Co., Ltd. Addressing Sheffield Rotary Club, Colonel Bristow dealt with the future of the coal industry. If the production of coal in this country was stopped, he said, and its place taken by oil, was it imagined that British industrial supremacy in the heavy industries could be maintained? During the last few years the progress made in low temperature carbonisation had opened up an avenue along which the coal industries might advance. Criticism had been levelled against established processes but the facts were that in the last four years the concern with which he was connected had carbonised close on half a million tons of coal, the products of which had been sold all over the country. At Barugh, near Barnsley, about eight million gallons of coal-oil and petrol had been distilled and distributed. These and related works near Doncaster had operated 24 hours per day 365 days per year since the end of 1930, and were still working at equal pressure.

C. AND J. THOMSON, LTD., Barrowfield Chemical Works, Glasgow, have been admitted to membership of the Glasgow Chamber of Commerce.

MR. JOHN JOHNSTON, mining manager at Deans Oil Works, and Mr. Robert Anderson, works manager at Seafield, have retired after many years service with the Cumphester Oil Co.

MR. KENNETH GORDON, of Imperial Chemical Industries, Ltd., gave a paper last week on "The Use of Hydrogenation for the Production of Oil from Coal" at a meeting of the Royal Scottish Society of Arts held in the Mining Laboratory of Edinburgh University.

THE CITY OF BIRMINGHAM INFORMATION BUREAU has received a number of enquiries from foreign manufacturers for the names of Birmingham firms who would be prepared either to manufacture their goods under licence, or come to some other arrangement for the production in Birmingham of goods previously made abroad.

THE DRUGS INQUIRY COMMITTEE, appointed by the Government of India, to investigate the sale of drugs in India, has recommended, among other things, that regulatory legislation be enacted, that a central council for the improvement of professional pharmacy be formed and that an Indian pharmacopoeia be compiled. It proposes to foster the Indian drug industry generally.

THE BARROW HEMATITE STEEL CO. are damping down the two furnaces which have been operating for some time, and intend to close down their works at Barrow. This step is due to the shortage of orders and the large stock of iron held. With the closing down of iron smelting at Barrow, production will be at a lower level than for a long time in North Lancashire and South Cumberland, for there will be only one furnace working at Millom and a small furnace at Backbarrow, near the foot of Windermere Lake, which makes a special refined iron, and formerly made charcoal iron.

PROFESSOR HENRY LOUIS, of Newcastle, Secretary of the North of England Institute of Mining and Mechanical Engineers, has been awarded the Bessemer Medal of the Iron and Steel Institute. The first Bessemer Medal was held by Sir Lowthian Bell, father of the late Sir Hugh Bell, and a former Mayor of Newcastle, and the honour was later conferred on the late Hon. Sir Charles Parsons, the inventor of the turbine. Professor Louis is one of the most famous mining engineers in the world. He was formerly head of the Department of Mining at Armstrong College, Newcastle, and he has recently passed through the presidential chair of the Iron and Steel Institute.

RECENT WILLS include:—Mr. Clarence Charles Knowles, of Hilbre Point, Hoylake, formerly a managing director of Lever Bros., Ltd., £51,834, with net personality £51,044; Mr. William Lee Mathews, of Westminster, formerly of Birmingham, a director of Thomas Bolton and Sons, Ltd., copper refiners, of Widnes, £43,285, with net personality £42,455; Mr. Harold Wade, of 6 Broadlands Road, Highgate, N., and of 112 Hatton Garden, E.C., chartered patent agent, of Boult, Wade, and Tennant, president of the Chartered Institute of Patent Agents, 1923-24, £70,714, with net personality £67,048. Mrs. Ella Frederica Meldola, of 6 Brunswick Square, London, widow of Professor Raphael Meldola, F.R.S., £23,490. Professor Walter Francis Reid, F.I.C., F.C.S., of Addlestone, Surrey, technical chemist and inventor, a former president of the Society of Chemical Industry, £1,120, with net personality £549. Mr. Joseph Oliver, of Hull, for more than 40 years associated with the firm of Loftus and Saltmer, Ltd., manufacturing chemists and formerly chairman of the Hull Chemists' Association, who died on August 9, £4,478, with net personality £3,613.

### Obituary

ALDERMAN THOMAS DARLING, of Marshall Meadows, Berwick, who has for 64 years been associated with the fertiliser business of Johnson and Darling, Berwick. Aged 81 years.

## Patent Literature

*The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2. at 1s. each.*

### Abstracts of Accepted Specifications

360,776. ANTHRAQUINONE VAT DYES. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, February 26, 1930. Addition to 298,284 (see THE CHEMICAL AGE, Vol. xix, p. 465).

Vat dyestuffs are obtained by treating a halogen derivative of a benzanthrone-pyrazolanthrone with an oxidising agent and alkylating the oxidation product to form mono- and di-hydroxy or keto derivatives. The latter may be treated with sulphurous acid to obtain hydroxy compounds. A number of examples are given.

360,840. CHLORINATED DIPHENYL. A. Carpmael, London. From I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, June 10, 1930.

Diphenyl is chlorinated in the presence of antimony trichloride up to the hexachloro derivative, at a temperature slightly above melting point. Resin-like products are obtained.

360,907. SULPHURIC ESTERS OF LEUCO VAT DYES. A. Carpmael, London. From I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, June 13, 1930.

Vat dyes are reduced by hydrogen sulphide and then esterified by sulphuric anhydride in the presence of a tertiary base without isolating the reduction products. Examples are given of the preparation of acid sulphuric esters and their salts of dyes such as indigo, etc.

360,949. VULCANISING ACCELERATORS. A. Carpmael, London. From I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, August 9, 1930.

Rubber vulcanisation is accelerated by adding the reaction products of  $\mu$ -mercapto-arylene thiazoles with halogen compounds in which the halogen is combined directly with a carbon atom which is linked by a double or triple bond to oxygen or nitrogen, except in acyl formation, e.g., chloroformic acid esters, phosgene, and cyanuric chloride.

360,070. LEAD OXIDES. S. Negishi, 835 Bessho Mura Amagasaki, Hyogo Ken, Japan. Application date, August 7, 1930.

Litharge is obtained by blowing lead suboxide and air into a combustion chamber heated by oil or gas burners to 250°-700° C. The litharge may be converted into red lead by repeated treatment.

360,127. CALCIUM SULPHITES AND SULPHATES. Chemical Engineering and Wilton's Patent Furnace, Ltd., T. O. Wilton, H. E. F. Green, and H. C. Mann, 76 Victoria Street, London. Application date, September 18, 1930.

Flue gases containing a low proportion of sulphur dioxide and trioxide are treated with a suspension of lime sufficient only to form bi-sulphite and bi-sulphate. Further lime is added in a second stage to precipitate the normal salts.

360,147. FERTILISERS. J. Y. Johnson, London. From I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, October 2, 1930.

Potassium chloride is heated with phosphoric acid or its ammonium salts and calcium sulphate to 500°-800° C. in a current of steam. Fertiliser containing potassium sulphate and mono-, di- or tri-calcium phosphate or ammonium calcium phosphate is obtained. The product may be mixed with other fertilisers.

360,165. AMMONIUM SULPHATE NITRATE. Gewerkschaft Victor, 2 Castrop-Rauxel, Westphalia, Germany. International Convention date, October 17, 1929.

Sulphuric acid, nitric acid and ammonia are introduced into a solution of ammonium sulphate and ammonium nitrate under strongly alkaline conditions to avoid nitrogen losses. The hot vapour containing ammonia passes through a rectifying column where it is enriched with ammonia, and then to a reflux condenser from which the vapour is condensed as concentrated ammoniacal liquor.

360,183. CHLORINE. W. W. Groves, London. From Chemische Fabrik von Heyden Akt.-Ges., Radebeul, Dresden, Germany. Application date, October 29, 1930.

A mixture of an aromatic sulphon dichloramide and a powdered caustic alkali or an oxide or hydroxide of an alkaline earth, or a salt of alkaline reaction is durable, but yields active chlorine when dissolved in water.

360,201. REFINING OILS. Standard Oil Development Co., Linden, N.J., and J. M. Jennings, 1202 Park Boulevard, Baton Rouge, La., U.S.A. International Convention date, November 20, 1929.

Hydrocarbon oils are hydrogenated at 750°-870° F. and pressures up to 200 atmospheres in the presence of a catalyst such as chromium oxide or molybdenum oxide, with or without zinc oxide, alumina, or alkali or alkaline earth oxides. The oil and hydrogen are withdrawn and cooled below 600° F. without substantial restriction of pressure, and still in contact with the catalyst.

360,277. RECOVERING OILS AND FATTY ACIDS. Deutsche Gasolin Akt.-Ges., 7 Reichskanzlerplatz, Charlottenburg, Berlin. International Convention date, January 23, 1930.

Mineral oils containing naphthenic acids are distilled and the residues are diluted with liquid hydrocarbon and treated with concentrated sulphuric acid to liberate the acids and recover contained oil.

### Specifications Accepted with Date of Application

365,099. Sodium thiosulphate, Manufacture of. G. B. Ellis, (Soc. des Usines Chimiques Rhône-Poulenc). September 26, 1930.

366,002. Colloidal silica obtained during the treatment of powdered silicates with acids, Method for the removal of. G. A. Blanc, August 23, 1929.

366,022. Acetic acid, Manufacture of. British Celanese Ltd., H. F. Oxley, W. H. Groomebridge, and W. Challis. October 27, 1930.

366,025. Separation of products containing oxygen from hydrocarbons. J. Y. Johnson. (I. G. Farbenindustrie Akt.-Ges.). October 27, 1930.

366,055. Chloro derivatives of the anthraquinone benzacridone series, Manufacture of. J. Y. Johnson (I. G. Farbenindustrie Akt.-Ges.). July 23, 1930.

366,072. Intermediate compounds and dyestuffs therefrom, Imperial Chemical Industries, Ltd., and E. Chapman. October 25, 1930.

366,106. Esters, Manufacture of. J. Y. Johnson. (I. G. Farbenindustrie Akt.-Ges.). September 22, 1930.

366,107. Thermal treatment of organic substances. J. Y. Johnston. (I. G. Farbenindustrie Akt.-Ges.). September 26, 1930.

366,112. Valuable hydrocarbons from gaseous hydrocarbons, Manufacture of. J. Y. Johnson. (I. G. Farbenindustrie Akt.-Ges.). October 24, 1930.

366,128. Colloidal suspensions in oils, Preparation of. Einstein's Electro Chemical Process, Ltd., and E. Hatschek. October 30, 1930.

366,140. Derivatives of  $\beta$ -hydroxy-naphthoic acid, Manufacture of. A. Carpmael. (I. G. Farbenindustrie Akt.-Ges.). November 1, 1930.

366,168. Separating non-ferrous metals from molten metalliferous materials, Process for. M. Lissauer, H. Lissauer, and B. Griesmann (trading as M. Lissauer et Cie). December 27, 1929.

366,169. Barium oxygen compounds, Production of. International Industrial and Chemical Co., Ltd. February 17, 1930.

366,244. Hydro-aromatic alcohols, Manufacture of. Schering-Kahlbaum Akt.-Ges. January 25, 1930.

366,268. Transformation of coke oven gas or town gas into ammonia and methyl alcohol. Soc. des Mines de Dourges. February 28, 1930.

366,340. Agents for wetting, emulsifying, equalising, dispersing, washing and softening. I. G. Farbenindustrie Akt.-Ges. April 2, 1930.

366,348. Dichlorethylene, Production of. Consortium für Elektro-Chemische Industrie Ges. May 9, 1930.

366,360 and 366,360. Hydrogen from hydrocarbon gases, Production of. Standard I. G. Co. May 31, 1930, and May 15, 1930.

366,404. Caustic soda low in sodium chloride, Production of. A. L. Mond. (I. G. Farbenindustrie Akt.-Ges.). June 15, 1931.

366,417. Hydrogen peroxide, Production of. Peroxydwerk-Siesel Akt.-Ges. July 25, 1930.

366,420. Soda, ammonium chloride, nitrate of soda, and hydrochloric acid, Manufacture of. A. Mentzel. August 15, 1930.

366,422. Hydrocarbons not saturated with hydrogen, and hydrogen from gas mixtures containing hydrocarbons, Manufacture of. J. Y. Johnson. (I. G. Farbenindustrie Akt.-Ges.). August 20, 1930.

## Applications for Patents

[In the case of applications for patents under the International Convention, the priority date (that is, the original application date abroad which the applicant desires shall be accorded to the patent) is given in brackets, with the name of the country of origin. Specifications of such applications are open to inspection at the Patent Office on the anniversary of the date given in brackets, whether or not they have been accepted.]

Baldwin, A. W., and Bunbury, H. M. Detergent agents. 3763. February 9.  
 Bannister, A. R., and Chubb, G. C. P. Emulsifying apparatus. 4098. February 11.  
 Barker, J., and Cornbrook Chemical Co., Ltd. Manufacture of complex compounds of selenium, etc. 4300. February 13.  
 Broadhurst, H. M., and Imperial Chemical Industries, Ltd. Treatment of caustic soda solutions. 4023. February 10.  
 Brocklebank, E. W. Distillation treatment of materials containing hydrocarbons. 4125. February 11.  
 Carmael, A. (*I. G. Farbenindustrie Akt.-Ges.*). Manufacture of condensation products of anthraquinone series. 3871. February 9.  
 — Conserving technical and pharmaceutical preparations. 3872. February 9.  
 Deutsche Hydrierwerke Akt.-Ges. Manufacture of derivatives of unsaturated fatty substances. 4123. February 11. (Germany, February 11, '31.)  
 Du Pont de Nemours & Co., E. I. Manufacture of artificial leather. 4145. February 11.  
 — Anthraquinone vat dyestuffs. 4170. February 12. (United States, February 12, '31.)  
 I. G. Farbenindustrie Akt.-Ges. Manufacture of inorganic coloured pigments. 3705. February 8. (Germany, February 7, '31.)  
 — Light-sensitive silver halide emulsions. 3707. February 8. (Germany, February 7, '31.)  
 — Manufacture of inorganic coloured pigments. 4116. February 11. (Germany, February 11, '31.)  
 — Improving taste and smell of fatty oils. 4230. February 12. (Germany, February 12, '31.)  
 — Light-sensitive silver halide emulsions. 3227. February 3. (Germany, February 3, 1931.)  
 Imperial Chemical Industries, Ltd., Semple, G. C., Shaw, C., Stephen, W. E., and Thomson, R. F. Production of derivatives of phthalic acids. 3804. February 9.  
 — Fire-proofing cork, etc. 3032. February 1.  
 — and Laurie, L. G. Scouring &c. animal fibres. 3034. February 1.  
 — and Wyler, M. Indophenols and sulphur dyes therefrom. 3035. February 1.  
 — Metal structures. 3263. 3264. 3265. February 3.  
 Jennison, H. G. Distillation of carbonaceous liquids. 3593. February 6.  
 Johnson, J. Y. (*I. G. Farbenindustrie Akt.-Ges.*). Separation of volatile matter from crude soaps. 3600. February 8.  
 — Manufacture of cobalt nitrosocarbonyl. 3691. February 8.  
 — Apparatus for manufacture of water-gas. 3692. February 8.  
 — Apparatus for gasification of fuels. 3693. February 8.  
 — Manufacture of quinaldines. 4088. February 11.  
 — Improving sodium nitrate for being stored &c. 4334. February 13.  
 — Manufacture of valuable products from mixtures of hydrocarbons. 4335. February 13.  
 — Separation of waxy substances from oils. 4336. February 13.  
 — Manufacture of pyridine compounds. 2028. February 1.  
 — Manufacture of fertilizers. 3350. February 4.  
 — Dehydrogenation of hydrogenated heterocyclic compounds. 3351. February 4.  
 — Manufacture of hydrogenated aromatic hydrocarbons &c. 3481. February 5.  
 — Manufacture of anthraquinone dyestuffs. 3482. February 5.  
 — Solvents. 2713. January 29.  
 Johnson, W., and Parry, T. H. Carbonisation of coal, etc. 2740. January 29.  
 Koppers Co. of Delaware. Treatment of chemical compounds. 2881. January 30. (United States, January 31, '31.)  
 — Treatment of liquids containing tar acids. 2882. January 30. (United States, January 31, '31.)  
 Letourneur, P. Assisting chemical reaction between gases and liquids. 2708. January 29. (France, February 11, '31.)  
 Lombaers, R. H. Purifying benzol, petroleum, &c. 3541. February 6.  
 Mendoza, M. Dyeing process. 2785. January 29.  
 Mond, A. L. (*I. G. Farbenindustrie Akt.-Ges.*). Filter presses &c. 2771. January 29.  
 Raschig Ges., Dr. F. Manufacture of phenol from chlorobenzene. 2370. January 26. (Germany, January 26, '31.)  
 Rodgers, S. C. Electrodeposition of chromium. 2587. January 28.  
 Schidrowitz, P. Manufacture of rubber. 4282. February 12.

## Points from Manufacturers' Literature

The Editor welcomes copies of new brochures and leaflets describing plant, equipment and products of interest to chemical manufacturers and the chemical-using trades.

TWO NEW SECTIONAL CATALOGUES have just been issued by A. Gallenkamp and Co., Ltd., of 17-29 Sun Street, Finsbury Square, London, E.C.2. One of these deals with fine chemical products for laboratory use, including analytical reagents, standard stains and indicators, all these being products of The British Drug Houses, Ltd. The other publication is a comprehensive catalogue of recognised scientific text books, dictionaries and encyclopedias.

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MODERN PRACTICE IN NICKEL DEPOSITION, viewed from American and Continental aspects, is the subject of a new brochure issued from the Bureau of Information on Nickel, which is maintained by the Mond Nickel Co., Ltd., at Imperial Chemical House, Millbank, London, S.W.1. The contents of this brochure are based on a paper which was read before the Electroplaters' and Depositors' Technical Society in June, 1931, the author being Mr. W. T. Griffiths. The chief feature noticed is the trend towards hot rapid plating solutions and towards the use of automatic equipment wherever the quantity of articles dealt with justifies it. In both of these directions, however, nickel plating practice in Great Britain is in no way behind that of foreign countries, but it is hoped that the summary given will be of interest to the trade in showing just what is being done abroad.

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VULCANISATION ACCELERATORS FOR THE RUBBER INDUSTRY are discussed in a series of leaflets issued by Robinson Brothers, Ltd., Exchange Buildings, Birmingham. The leaflets already received deal with the properties of piperidine, piperidine pentamethylene dithiocarbamate, lead pentamethylene dithiocarbamate, dipentamethylene thiuram disulphide and cadmium pentamethylene dithiocarbamate, and are clipped in a convenient folder adapted for the reception of additional leaflets as they are issued. While it cannot be claimed that piperidine compounds were the first organic substances to be used as vulcanisation accelerators, it appears to be certain that piperidine pentomethylene dithiocarbamate (P.P.D.) was the first really active accelerator to be used, and for twenty years it has remained unsurpassed as an ultra-accelerator, possessing great activity while at the same time conferring exceptionally good ageing properties on the vulcanised rubber. In the past the use of piperidine accelerators has been limited to special work owing to high cost and to the difficulties attending the use of ultra accelerators in certain types of work. By improvements in the production process and by developing new derivatives of piperidine, Robinson Brothers, Ltd., have completely altered this state of affairs, so that not only is the original P.P.D. available at greatly reduced price, but piperidine accelerators can now be obtained for use in almost all general types of work, and for special applications which are being developed by constant research.

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FRACTIONAL H.P. ELECTRIC MOTORS are dealt with in a new folder which has been issued by Metropolitan-Vickers Electrical Co., Ltd., of Trafford Park, Manchester. In the hints which are given on choosing the correct type of motor to drive any particular machine, it is stated that "Met-Vick" motors of extremely low power, such as 1/50, 1/30 and 1/16 h.p., are designed for use with either alternating or continuous current supply. This great advantage usually compensates for the fact that the motors possess a series characteristic, which, of course, makes their speed vary to a certain extent with the load. Such motors, however, give the same power output, for similar voltages, when running on either A.C. or D.C. In one type of A.C. motor described, a special feature is their quiet running to which great care has been paid in the design, a big factor of which (in sizes up to and including 1/2 h.p.) is the raising of the brushes from the commutator after starting so that the motors run subsequently as ordinary induction machines. By simple reconnection of the terminals the motors can be made suitable for operation on either of two voltages and are normally wound for the following combinations—100/200, 110/220 and 120/240 volts.

## Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

### General Heavy Chemicals

ACID, ACETIC, 40% TECH.—£19 15s. per ton d/d address U.K. in casks.  
 ACID CHROMIC.—11d. per lb., less 2½% d/d U.K.  
 ACID HYDROCHLORIC.—Spot, 3s. 9d. to 6s. carboy d/d, according to purity, strength and locality.  
 ACID NITRIC, 80° Tw.—Spot, £20 to £25 per ton makers' works, according to district and quality.  
 ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations; 140° Tw., Crude acid, 6os. per ton; 168° Tw., Arsenical, £5 10s. per ton; 168° Tw., Non-arsenical, £6 15s. per ton.  
 AMMONIA (ANHYDROUS).—Spot, 10d. per lb., d/d in cylinders.  
 AMMONIUM BICHROMATE.—8d. per lb., d/d U.K.  
 BISULPHITE OF LIME.—£7 10s. per ton, f.o.r. London, packages free.  
 BLEACHING POWDER, 35.37%.—Spot, £8 15s. per ton d/d station in casks, special terms for contracts.  
 BORAX, COMMERCIAL.—Granulated, £15 10s. per ton; powder, £17 per ton. (Packed in 1 cwt. bags, carriage paid any station in Great Britain. Prices quoted are for one ton lots and upwards.)  
 CALCIUM CHLORIDE (SOLID), 70/75%.—Spot, £5 5s. to £5 15s. per ton d/d station in drums.  
 CHROMIUM OXIDE.—10d. to 10½d. per lb. according to quantity d/d U.K.  
 CHROMETAN.—Crystals, 3½d. per lb. Liquor, £19 10s. per ton d/d U.K.  
 METHYLATED SPIRIT 61 O.P.—Industrial, 1s. 8d. to 2s. 3d. per gall.; pyridinised industrial, 1s. 10d. to 2s. 5d. per gall.; mineralised, 2s. 9d. to 3s. 3d. per gall. 64 O.P., 1d. extra in all cases. Prices according to quantity.  
 NICKEL SULPHATE.—£38 per ton d/d.  
 NICKEL AMMONIA SULPHATE.—£38 per ton d/d.  
 POTASH CAUSTIC.—£30 to £33 per ton.  
 POTASSIUM BICHROMATE CRYSTALS AND GRANULAR.—5d. per lb. net d/d U.K., discount according to quantity; ground 5½d. per lb.  
 POTASSIUM CHLORATE.—3½d. per lb. ex-wharf, London, in cwt. kegs.  
 POTASSIUM CHROMATE.—6½d. per lb. d/d U.K.  
 SALAMMONIAC.—First lump, spot, £42 17s. 6d. per ton d/d address in barrels. Chloride of ammonia, £37 to £45 per ton, carr. paid.  
 SALT CAKE, UNGROUND.—Spot, £3 15s. per ton d/d station in bulk.  
 SODA ASH, 58%.—Spot, £6 per ton, f.o.r. in bags, special terms for contracts.  
 SODA CAUSTIC, SOLID, 76/77° E.—Spot, £14 10s. per ton, d/d station.  
 SODA CRYSTALS.—Spot, £5 to £5 5s. per ton, d/d station or ex depot in 2-cwt. bags.  
 SODIUM ACETATE 97/98%.—£21 per ton.  
 SODIUM BICARBONATE, REFINED.—Spot, £10 10s. per ton d/d station in bags.  
 SODIUM BICHROMATE CRYSTALS, CAKE AND POWDER.—4d. per lb. net d/d U.K., discount according to quantity. Anhydrous 5d. per lb.  
 SODIUM BISULPHITE POWDER, 60/62%.—£16 10s. per ton delivered 1-cwt. iron drums for home trade.  
 SODIUM CHLORATE.—2½d. per lb.  
 SODIUM CHROMATE.—3½d. per lb. d/d U.K.  
 SODIUM NITRITE.—Spot, £19 to £22 per ton, d/d station in drums.  
 SODIUM PHOSPHATE.—£15 per ton, f.o.r. London, casks free.  
 SODIUM SILICATE, 140° Tw.—Spot, £8 5s. per ton, d/d station returnable drums.  
 SODIUM SULPHATE (GLAUBER SALTS).—Spot, £4 2s. 6d. per ton, d/d.  
 SODIUM SULPHIDE SOLID, 60/62%.—Spot, £10 15s. per ton, d/d in drums. Crystals—Spot, £7 15s. per ton, d/d in casks.  
 SODIUM SULPHITE, PEA CRYSTALS.—Spot, £13 10s. per ton; d/d station in kegs. Commercial—Spot, £9 10s. per ton, d/d station in bags.

### Coal Tar Products

ACID CARBOLIC CRYSTALS.—5½d. to 6½d. per lb. Crude 60's 1s. 4d. to 1s. 5d. per gall.  
 ACID CRESYLIC 99/100.—1s. 8d. to 1s. 9d. per gall. B.P., 2s. 6d. to 3s. per gall. Refined, 2s. to 2s. 2d. per gall. Pale, 98%, 1s. 7d. to 1s. 8d. Dark, 1s. 4d. to 1s. 4½d.  
 BENZOLE.—Prices at works: Crude, 7d. to 7½d. per gall.; Standard Motor, 1s. 2d. to 1s. 3d. per gall. 90%—1s. 3d. to 1s. 4d. per gall. Pure, 1s. 6d. to 1s. 7d. per gall.  
 TOLUOLE.—90%, 2s. 4d. per gall. Pure, 2s. 7d. per gall.  
 XYLOL.—2s. per gall. Pure, 2s. 3d. per gall.  
 CREOSOTE.—Standard specification, for export, 4½d. to 5d. net per gall. f.o.b.; for Home, 3½d. per gall. d/d.  
 NAPHTHA.—Solvent, 90/100, 1s. 3d. per gall. Solvent, 95/100, 1s. 5d. to 1s. 6d. per gall. Solvent, 90/100, 11d. to 1s. 2d. per gall.  
 NAPHTHALENE.—Purified Crystals, £11 10s. per ton, in bags.  
 PITCH.—Medium soft, 80s. to 85s. per ton, in bulk at makers' works.  
 PYRIDINE.—90/140, 4s. per gall., 90/160, 4s. to 4s. 6d. per gall., 90/180, 2s. to 2s. 6d. per gall.

### Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:  
 ACID, BENZOIC, B.P. (ex Toluol).—1s. 9½d. per lb.  
 ACID, GAMMA.—Spot, 4s. per lb. 100% d/d buyer's works.  
 ACID H.—Spot, 2s. 4½d. per lb. 100% d/d buyer's works.  
 ACID NAPHTHONIC.—1s. 2d. per lb. 100% d/d buyer's works.  
 ACID NEVILLE AND WINTHROP.—Spot, 3s. per lb. 100% d/d buyer's works.  
 ACID SULPHANILIC.—Spot, 8½d. per lb. 100% d/d buyer's works.  
 ANILINE OIL.—Spot, 8d. per lb., drums extra, d/d buyer's works.  
 ANILINE SALTS.—Spot, 8d. per lb. d/d buyer's works, casks free.  
 BENZALDEHYDE.—Spot, 1s. 8d. per lb., packages extra, d/d buyer's works.  
 BENZIDINE BASE.—Spot, 2s. 5d. per lb. 100% d/d buyer's works.  
*o*-CRESOL 30/31° C.—£2 6s. 5d. per cwt., in 1-ton lots.  
*m*-CRESOL 98/100%.—2s. 9d. per lb., in ton lots.  
*p*-CRESOL 34.5° C.—1s. 9d. per lb., in ton lots.  
 DICHLORANILINE.—2s. 2d. per lb.  
 DIMETHYLANILINE.—Spot, 1s. 6d. per lb., packages extra, d/d buyer's works.  
 DINITROBENZENE.—8½d. per lb.  
 DINITROTOLUENE.—48/50° C., 8d. per lb.; 66/68° C., 8½d. per lb.  
 DIPHENYLAMINE.—Spot, 2s. per lb., d/d buyer's works.  
*a*-NAPHTHOL.—Spot, 2s. 4d. per lb., d/d buyer's works.  
*B*-NAPHTHOL.—Spot, £75 per ton in 1 ton lots, d/d buyer's works.  
*a*-NAPHTHYLAMINE.—Spot, 11½d. per lb., d/d buyer's works.  
*B*-NAPHTHYLAMINE.—Spot, 2s. 9d. per lb., d/d buyer's works.  
*o*-NITRANILINE.—5s. 10d. per lb.  
*m*-NITRANILINE.—Spot, 2s. 6d. per lb. d/d buyer's works.  
*p*-NITRANILINE.—Spot, 1s. 8d. per lb. d/d buyer's works.  
 NITROBENZENE.—Spot, 6½d. per lb.; 5-cwt. lots, drums extra, d/d buyer's works.  
 NITRONAPHTHALENE.—8½d. per lb.  
 SODIUM NAPHTHIONATE.—Spot, 1s. 9d. per lb. 100% d/d buyer's works.  
*o*-TOLUIDINE.—Spot, 9½d. per lb., drums extra, d/d buyer's works.  
*p*-TOLUIDINE.—Spot, 1s. 9d. per lb., d/d buyer's works.  
*m*-XYLIDINE ACETATE.—3s. 6d. per lb., 100%.

### Wood Distillation Products

ACETATE OF LIME.—Brown, £7 10s. per ton. Grey, £12 per ton.  
 Liquor, 8d. to 9d. per gall.  
 ACETIC ACID, TECHNICAL, 40%.—£16 15s. to £17 15s. per ton.  
 ACETONE.—£63 to £65 per ton.  
 AMYL ACETATE, TECHNICAL.—90s. to 98s. per cwt.  
 CHARCOAL.—£6 10s. to £10 10s. per ton, according to grade and locality.  
 IRON LIQUOR.—24°/30° Tw., 10d. to 1s. 2d. per gall.  
 METHYL ACETONE, 40/50%.—£52 per ton.  
 RED LIQUOR.—16° Tw., 8½d. to 10d. per gall.  
 WOOD CREOSOTE.—1s. to 2s. 6d. per gall., unrefined.  
 WOOD NAPHTHA, MISCELL.—3s. to 4s. per gall. Solvent, 3s. 9d. to 4s. 9d. per gall.  
 WOOD TAR.—£2 10s. to £6 per ton.  
 BROWN SUGAR OF LEAD.—£32 per ton.

### Pharmaceutical and Photographic Chemicals

The following change is reported in the markets for pharmaceutical and photographic chemicals:—

LEMON.—7s. 6d. per lb.

### Rubber Chemicals

There are no changes to report in the market prices of rubber chemicals which were quoted in THE CHEMICAL AGE of January 16.

### Dutch Exports of Sulphate of Ammonia

INCREASE in the synthetic nitrogen production in Netherlands has led to an expansion in export sales. Netherlands shipments of ammonium sulphate during the first nine months of 1931 totalled 176,033 metric tons, which represents a remarkable growth, when compared to the 64,977 tons exported in the corresponding period of 1930. Imports of nitrogenous fertilisers in the early months of 1931 were considerably less than the receipts for the previous year. The position was reversed during the month of September by large receipts of foreign materials, principally Germany. In the case of sulphate of ammonia, the September importations of 42,350 tons brought the total for the nine months period to 49,608 tons, of which 43,978 are credited to German sources.

## London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE by Messrs. R. W. Green & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.

London, February 18, 1932.

THE active demand for the various chemicals has been maintained, the position of all articles being very firm with an upwards tendency.

### General Chemicals

**ACETONE.**—Is in satisfactory demand at £65 6s. per ton.  
**ACID, ACETIC.**—Firm at £37 5s. to £39 5s. per ton for Technical 80%, and £38 5s. to £40 5s. for the Pure 80% with a steady daily demand.  
**ACID, CITRIC.**—Continues at 1s. 1d. to 1s. 2d. per lb., less 5%.  
**ACID, FORMIC.**—In good demand and firm at £51 5s. per ton.  
**ACID, OXALIC.**—Firm at £50 per ton in casks and £51 10s. per ton in kegs, with a good demand.  
**ALUMINA SULPHATE.**—Is steady at £8 15s. to £9 10s. per ton according to quality and quantity. (Another source quotes £8 10s. per ton).  
**ALKENIC.**—The market is firmly maintained at about £24 10s. c.i.f. main U.K. Ports for imported material with, if anything, a little better inquiry in evidence.  
**BARIUM CHLORIDE.**—Is firm at £11 10s. per ton.  
**CREAM OF TARTAR.**—Firm at 10s. 6d. to 10s. 10s. per cwt.  
**FORMALDEHYDE.**—Is in good steady demand at about 28s. 6d. to 30s. per cwt.  
**LEAD ACETATE.**—About £42 4s. per ton, with Brown £1 per ton less.  
**LITHOPONE.**—Continues firm at about £30 per ton.  
**POTASH BICHROMATE.**—Is firm at 5d. per lb. with the usual discounts for contracts, for delivery up to the end of March.  
**POTASH CHLORATE.**—Is very firm at about £33 35 per ton.  
**PERMANGANATE OF POTASH.**—Needle Crystals B.P. is firm at about 8d. per lb.  
**POTASH PRUSSIATE.**—Is firm at about 8d. per lb. with a good demand.  
**SODA ACETATE.**—Continues very firm at about £22 23 per ton.  
**SODA BICHROMATE.**—4d. per lb., with usual discounts for contracts up to the end of March.  
**SODA CHLORATE.**—Is very firm with a good demand at about £30 per ton.

### Latest Oil Prices

**LONDON.**, February 17.—**LINSEED OIL** was firm. Spot, ex mill, £17 5s.; February, £14 17s. 6d.; March-April, £15 7s. 6d.; May-August, £16 12s. 6d.; September-December, £17 15s. per ton, naked. **RAPE OIL** was steady. Crude, extracted, £30 10s.; technical refined, £32 10s. per ton, naked, ex wharf. **COTTON OIL** was firm. Egyptian crude, £23 10s.; refined common edible, £27 10s.; and deodorised, £29 10s. per ton, naked, ex mill. **TURPENTINE** was steady. American, spot, 50s. 6d.; March-April, 51s. 3d. per cwt. **HULL.**—**LINSEED OIL**.—Spot and February, £15 7s. 6d.; March-April at £15 15s.; May-August at £16 10s.; and September-December, at £17 10s. per ton, naked. **COTTON OIL.**—Egyptian, crude, spot, £23; edible, refined, spot, £25 10s.; technical, spot, £25 10s.; deodorised, £27 10s. per ton, naked. **PALM KERNEL OIL.**—Crude, f.m.q., spot, £27 per ton, naked. **GROUNDNUT OIL.**—Crushed-extracted, spot, £37; deodorised, £41 per ton. **SOYA OIL.**—Crushed-extracted, spot, £23 5s.; deodorised, £26 15s. per ton. **RAPE OIL.**—Crushed-extracted, spot, £30; refined £32 per ton. **COD OIL.**, 16s. 6d. per cwt. **CASTOR OIL.**—Pharmacy, spot, 46s. 6d.; first, 41s. 6d.; second, 39s. 6d. per cwt. **TURPENTINE**, American, spot, 54s. per cwt.

### Nitrogen Fertilisers

**SULPHATE OF AMMONIA.**—**Export.**—The market continues unchanged at £5 5s. per ton f.o.b. U.K. port in single bags. Although the demand is satisfactory, supplies are plentiful and the price remains steady. **Home.**—There is a brisk demand in the home market and it is anticipated that deliveries during February will be much heavier than usual. The price remains unchanged at £7 per ton in 6-ton lots delivered to consumers' nearest stations.

**IMPORTED NITRATE OF SODA.**—The price of £8 16s. per ton remains in operation. It appears that the 10 per cent. import duty will apply to this product, but on account of the large stocks already in the country it is not expected that the price will be advanced for the present season.

**BRITISH NITRATE OF SODA.**—Price remains unchanged.

**NITRO-CHALK.**—As this product is quicker acting than sulphate of ammonia, up to the present the demand has shown only a small increase, but a heavy demand is expected later in the season.

### South Wales By-Products

THERE is scarcely any change in South Wales by-product activities. Business in all sections continues to be slow and unsatisfactory, and

**SODA NITRITE.**—96.98% is in good demand and firm at about £20 10s. to £21 10s. per ton. (Another source quotes £21 22 per ton.)

**SODA PERBORATE.**—Quoted at 10d. per lb.

**SODA PHOSPHATE.**—Quoted at £13 per ton.

**SODA PRUSSIATE.**—Continues firm at 5d. to 5½d. per lb., according to quantity, with a steady demand.

**SODA SULPHIDE.**—Unchanged.

**ZINC SULPHATE.**—Remains unchanged at about £12 per ton.

### Coal Tar Products

THERE is no change to report in the coal tar products market, which remains quiet. Prices still hold firm, but are unaltered from last week.

**MOTOR BENZOL.**—Quoted at 1s. 4d. to 1s. 5d. per gallon f.o.r.

**SOLVENT NAPHTHA.**—Unchanged, at 1s. 1d. to 1s. 2d. per gallon.

**HEAVY NAPHTHA.**—Remains at 11d. to 1s. 0½d. per gallon f.o.r.

**CREOSOTE OIL.**—Obtainable at about 3d. to 3½d. per gallon f.o.r. in the North, and at about 4d. to 4½d. per gallon in London.

**KRESYLIC ACID.**—Worth about 1s. 6d. per gallon f.o.r. for the 98 100% quality, and about 1s. 4d. per gallon for the Dark quality 95 97%.

**NAPHTHALENES.**—Unchanged at £3 to £3 10s. per ton for the fire-lighter quality, at about £4 to £4 10s. per ton for the 74 76 quality, and at about £5 10s. to £6 per ton for the 76 78 quality.

**PITCH.**—Unchanged, at 7s. to 8s. per ton, f.o.b. East Coast port.

THE following additional market conditions are reported:—

**PHENOL.**—The market is steady and firm. Prices are unchanged at 5½d. to 6d. per lb., but there is considerable amount of inquiry.

**CRESYLIC ACID.**—The market is quiet; prices unchanged 97/99% at 1s. 7d. to 1s. 9d. per gallon; 99 100% at 1s. 1d. to 2s. per gallon.

**SODIUM SALICYLATE.**—Is firm; good inquiry is being experienced which is naturally to be expected at this season of the year.

**SALICYLIC ACID.**—Also in good demand, prices unchanged.

**ASPIRIN.**—Is quoted at unchanged rates.

**VANILIN.**—Prices 16s. to 18s. for clove oil material; Guaiacol vanillin 1s. od. per lb. less.

there are no prospects of any immediate improvement. The call for pitch remains small and sporadic, practically every order placed being for prompt delivery. There is no change in values, while stocks remain well in excess of demands. Road tar has a slightly better call, but is still far from satisfactory. Prices are unchanged round about 13s. per 40-gallon barrel. Refined tars have a steady, if moderate, call with prices for coke-oven and gasworks tar unchanged. Naphthas continue to be in slow demand. Solvent has a small, sporadic call, but there is scarcely any call for heavy. Creosote is weak, but motor benzol is a fairly strong feature. Patent fuel and coke exports are unsatisfactory. Patent fuel prices are:—1qs. to 1qs. 3d., ex-ship, Cardiff; 18s. to 18s. 3d., ex-ship Swansea. Coke prices are:—Best foundry, 32s. 6d. to 36s. 6d.; good foundry, 22s. 6d. to 25s.; furnace, 17s. to 18s.

### Scottish Coal Tar Products

MOST products remain firm in tone with prompt supplies rather scarce. Refined coal tar for road making is the centre of interest at the present time.

**CRESYLIC ACID.**—Only a moderate business is being conducted. Values are irregular as follows:—Pale, 99/100 per cent., 1s. 3d. to 1s. 4d. per gallon; pale, 97/99 per cent., 1s. 1d. to 1s. 2d. per gallon; dark, 97/99 per cent., 1s. 0½d. to 1s. 1d. per gallon; all f.o.r. makers' works. High boiling acid remains firm at 2s. 6d. to 3s. per gallon.

**CARBOLIC SIXTIES.**—Supplies are not too plentiful and value is steady at 1s. 7d. to 1s. 8d. per gallon f.o.r. naked.

**CREOSOTE OIL.**—With prompt supplies on the short side quotations are steady. Specification oils, 2½d. to 3d. per gallon; washed oil, 3d. to 3½d. per gallon; gas works ordinary, 3d. to 4d. per gallon; all f.o.r. in bulk quantities.

**COAL TAR PITCH.**—Export price is nominal at 72s. 6d. to 77s. 6d. per ton f.o.b. Glasgow. The home market continues to look after production and 7s. to 8s. per ton ex works in bulk is obtainable.

**BLAST FURNACE PITCH.**—Stocks are becoming low, but controlled price remains at 50s. per ton f.o.r. works, and 55s. per ton f.a.s. Glasgow for export.

**REFINED COAL TAR.**—Considerable activity is noticeable in this department. Quotations are firm at 4d. per gallon ex works in buyers' packages.

**WATER WHITE PRODUCTS** remain very dull. Motor Benzole, 1s. 3d. to 1s. 4d. per gallon; 90/160 Solvent, 1s. 2½d. to 1s. 3d. per gallon; and 90/190 Heavy Solvent, 1s. 0½d. to 1s. 1d. per gallon; all in bulk, ex works.

## Scottish Chemical Market

*The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE by Messrs. Chas. Tennant and Co., Ltd., Glasgow, and may be accepted as representing this firm's independent and impartial opinions.*

Glasgow, February 17, 1932.

NUMEROUS inquiries are being received for heavy chemicals for delivery before the proposed tariffs commence to operate. Export inquiries still remain steady.

ACETONE.—Quoted £66 to £68 per ton ex wharf, according to quantity.

ACID, ACETIC.—Prices ruling are as follows: glacial, 98/100%, £48 to £59 per ton; pure, 80%, £38 5s. per ton; technical, 80%, £37 5s. delivered buyer's premises Great Britain.

ACID, BORIC.—Granulated commercial, £26 10s. per ton; B.P. crystals, £35 10s. per ton; B.P. powder, £36 10s. per ton, in 1-cwt. bags, delivered Great Britain free in one-ton lots upwards.

ACID, HYDROCHLORIC.—Usual steady demand. Arsenical quality, 4s. per carboy. Darsenicated quality, 5s. per carboy, ex works, full wagon loads.

ACID, NITRIC, 80° QUALITY.—£23 per ton, ex station, full truck loads.

ACID, OXALIC.—98/100%.—On offer at £50 to £53 per ton, ex store.

ACID, SULPHURIC.—£3 12s. 6d. per ton, ex works, for 144° quality. £7 per ton for 168°. Darsenicated quality, 20s. per ton extra.

ACID, TARTARIC, B.P. CRYSTALS—Quoted 1s. 1½d. to 1s. 1½d. per lb., less 5% carriage paid.

ALUMINA SULPHATE.—Quoted £8 to £8 10s. per ton, ex store.

ALUM, LUMP POTASH.—Now quoted at £9 per ton, ex store.

AMMONIA ANHYDROUS.—Quoted 10d. to 1s. per lb., containers extra and returnable.

AMMONIA CARBONATE.—Lump quality quoted £36 per ton. Powdered, £38 per ton, packed in 5 cwt. casks, delivered U.K. stations or f.o.b. U.K. ports.

AMMONIA LIQUID, 80°.—Unchanged at about 2½d. to 3d. per lb., delivered, according to quantity.

AMMONIA MURIATE.—British dog tooth crystals quoted round £32 to £35 per ton, carriage paid according to quantity.

ANTIMONY OXIDE.—Spot material quoted at about £29 per ton, c.i.f. U.K. ports.

ARSENIC, WHITE.—White Powdered, quoted £25 10s. per ton ex wharf. Spot material on offer at £26 10s. per ton ex store.

BARIUM CHLORIDE.—Price about £11 5s. per ton in casks, ex store.

BLEACHING POWDER.—British manufacturers' contract price to consumers £8 15s. per ton, in 5s. 6d. cwt. casks.

CALCIUM CHLORIDE.—British manufacturers' price, £5 5s. to £5 15s. per ton, according to quantity and point of delivery.

COPPERS, GREEN.—At about £3 15s. per ton, f.o.r. or ex works.

FORMALDEHYDE, 40%.—Now quoted £28 per ton, ex store.

GLAUBER SALTS.—English material quoted £3 15s. per ton, ex station.

LEAD, RED.—Price now £30 per ton, delivered buyer's works.

LEAD, WHITE.—Quoted £40 per ton, carriage paid.

LEAD ACETATE.—White crystals quoted round about £42 to £44 per ton c.i.f. U.K. ports. Brown, on offer at about £1 per ton less.

MAGNESITE, GROUND CALCINED.—Quoted £9 per ton, ex store.

POTASSIUM BICHROMATE.—Quoted 5d. per lb., delivered U.K. or c.i.f. Irish ports, with an allowance for contracts.

POTASSIUM CARBONATE.—96% to 98%. In good demand. Spot material on offer, £28 per ton ex store.

POTASSIUM CHLORATE.—99½/100% Powder.—Quoted £34 per ton ex store.

POTASSIUM NITRATE.—Refined granulated quality quoted £28 per ton, c.i.f. U.K. ports. Spot material on offer at about £30 per ton ex store.

POTASSIUM PERMANGANATE B.P. CRYSTALS.—Quoted 8½d. per lb., ex store.

POTASSIUM PRUSSIATE (YELLOW).—Spot material quoted 8d. per lb., ex store.

SODA, CAUSTIC.—Powdered 98/99%, £17 10s. per ton in drums, £18 15s. in casks. Solid 76/77%, £14 10s. per ton in drums, £14 12s. 6d. per ton for 70/72% in drums; all carriage paid buyer's station, minimum four-ton lots; for contracts 10s. per ton less.

SODIUM BICARBONATE.—Refined recrystallised, £10 10s. per ton, ex quay or station.

SODIUM BICHROMATE.—Quoted 4d. per lb., delivered buyer's premises, with concession for contracts.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station; powdered or pea quality, 7s. 6d. per ton extra. Light soda ash, £7 per ton, ex quay, minimum four-ton lots, with various reductions for contracts.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £9 5s. per ton, ex station, minimum four-ton lots. Pea crystals on offer at £15 per ton, ex station, four-ton lots.

SODIUM PRUSSIATE.—Quoted 5d. to 5½d. per lb. ex store.

SODIUM SULPHATE (SALTCAKE).—Price, 65s. per ton, delivered, for ground quality.

SODIUM SULPHIDE.—Prices for home consumption: solid 60/62%, £10 5s. per ton; broken, 60/62%, £11 5s. per ton; crystals 30/32%, £8 2s. 6d. per ton, delivered buyer's works on contract, minimum four-ton lots. Spot material, solid, 5s. per ton extra; crystals, 2s. 6d. per ton extra.

SULPHUR.—Flowers, £12 10s. per ton; roll, £12 10s. per ton; rock, £9 per ton; ground American, £12 per ton, ex store.

ZINC CHLORIDE 98%.—British material now offered at round about £18 10s. per ton, f.o.b. U.K. ports.

ZINC SULPHATE.—Quoted £12 per ton.

NOTE.—The above prices are for bulk business and are not to be taken as applicable to small parcels.

## Borax Consolidated, Ltd.

### Potash Developments

SPEAKING at the thirty-fourth annual meeting of Borax Consolidated, Ltd., on February 15, the Earl of Leven and Melville, chairman of directors, said the improved trading profit, which had been made on a substantial reduction in tonnage turnover, was largely attributable to the lower cost of production resulting from the company's latest developed mineral and the reorganisation of the works in the United States. The manufacturing cost was the lowest yet obtained.

At the last meeting he had explained why there was now a close association between their main product (borax) and potash, owing to the joint production of these products by others and the necessity for the Company for its own protection to enlarge its field of operations by an interest in the production of potash either by developing their brine property at Seales Lake or otherwise, and that they had acquired a substantial interest in the new potash field in New Mexico in the United States. The United States potash company possessing that property has been vigorously developing the mine, and by the middle of this year should commence refining operations. In the meantime the potash company had entered into contracts with some of the large fertiliser companies for the supply of the potash direct from the mine, and had already supplied a considerable tonnage. In consequence they might anticipate a very satisfactory return on their investment.

The balance of profit and loss account was £188,249, making with £101,248 brought forward a total of £379,498. Having provided for first and second debenture interest £101,250, for the dividend on the cumulative preference shares £44,000, for the sinking fund for the first debenture stock £5,825, and for the buildings, plant and depreciation reserve account £30,000, there was a balance of £168,423, which the board proposed to carry forward.

## Parent Coal Carbonisation Trust, Ltd.

### Petition to Stand Over

In the Companies Court on Monday, Mr. Justice Bennett had before him a petition for the winding-up of Parent Coal Carbonisation Trust, Ltd.

Mr. A. Grant, K.C., for the Company, pressed for an adjournment and said the process was highly efficient and valuable. Negotiations were in progress and it was hoped that a scheme would go through, which would result in the paying off of the unsecured creditors in full and provide for further capital for the company. Counsel mentioned that one of the largest industrial companies was interested in the matter. Counsel said he also opposed the petition as representing creditors for a very large sum. There was also a scheme suggested that the unsecured creditors should be treated *pari passu* with debenture holders, by the issue of debentures to the unsecured creditors. The debenture holders had consented to this.

Counsel for petitioning creditors said some of them were not prepared to take this.

Mr. Grant said the proposal was to transfer existing debentures to the creditors. There was also a scheme to get further capital. The company was one of vital importance and new processes had just come to fruition.

His lordship directed the matter to stand over for 14 days, the company to give the petitioning creditors more information and to bring the matter before the unsecured creditors.

## Manchester Chemical Market

[FROM OUR OWN CORRESPONDENT.]

*Manchester, February 17, 1932.*

As stated last week the near approach of the application of the general tariff, which will apply to virtually the entire range of imported chemical products, has stimulated the demand for deliveries against contracts, and where there has been a reasonable prospect of securing delivery before the end of the present month it is reported that fresh orders have been placed. Stockholders of imported chemicals are also dealing with a fair volume of inquiry. The comparative stability of sterling during recent weeks has restricted the upward movement of prices, but the tone of the market is firm generally, and it is a safe assumption that advances more or less commensurate with the duties will be witnessed immediately the general tariff comes into operation at the beginning of next month. Meanwhile, there is still a fair call for contract deliveries of textile chemicals, but the statement this week of the President of the Manchester Chamber of Commerce concerning immediate cotton trade prospects was not inspiring.

### Heavy Chemicals

A quiet business has been reported in phosphate of soda, with offers of the dibasic quality at round £13 per ton. No more than a moderate inquiry has been met with in the case of hyposulphite of soda, which continues on offer at £9 5s. per ton for the commercial crystals, and from £15 for the photographic quality. There has been a quietly steady movement of bichromate of soda, with quotations in this section on the basis of 4d. per lb. in contracts, less 1 to 3½ per cent., and 4d. net for spot lots. Not a great deal of interest has been shown in prussiate of soda this week but values are well held at from 5d. to 5½d. per lb., according to quantity, for crystals, and 5½d. to 6d. for powdered. Salt cake is rather featureless, with prices ranging from £3 to £3 2s. 6d. per ton. Sulphide of sodium has been in rather slow request this week; the 60-62 per cent. concentrated solid material is quoted at up to £11 10s. per ton, and the commercial crystals at about £8 5s. Chlorate of soda meets with a moderate inquiry at £30 per ton. Caustic soda is moving in fair quantities against existing commitments, with contract offers at from £12 15s. to £14 per ton, according to grade. Alkali is firm and in moderate request at about £6 per ton, with bicarbonate of soda in like position at round £10 10s. per ton.

There has been a relatively quiet demand about for yellow prussiate of potash, although quotations are well held at round 8½d. per lb. Bichromate of potash is also firm at 5d. per lb. although new bookings have not been of much consequence. Caustic potash has met with a moderate inquiry and values are maintained at about £38 per ton. Carbonate of potash ranges from about £29 to £30 per ton. With regard to chlorate of potash the demand has been on quiet lines but prices are steady at £34 per ton. Permanganate of potash is well held at the recent advance to 8½d. to 8¾d. per lb. for the B.P. quality and round 8½d. for the commercial.

Sulphate of copper seems to be the turn steadier although the demand for this material is little if any better than before; to-day's rates are at up to £18 10s. per ton, f.o.b. White powdered arsenic, Cornish makes, is scarce and nominal at £25 10s. per ton, on rails. A quiet trade is going through in the lead products, with white and brown acetate at £39 10s. and £38 per ton, and nitrate at round £29. The acetates of lime are steady although only in limited inquiry at the moment at £12 10s. per ton for the grey and £8 for the brown material.

### Acids and Tar Products

Tartaric and citric acids are fairly steady at up to 1s. 1½d. and 1s. 2d. per lb., respectively, although reports as to the demand for both during the past week have not been inspiring. Oxalic acid has been in moderate inquiry and values are well held at £2 10s. per cwt., ex store. Acetic acid continues firm, with business on quietly steady lines; the technical glacial quality is quoted at about £52 per ton and the 80 per cent. commercial at £39.

Pitch is firm on continued scarcity of prompt parcels and up to £4 5s. per ton, f.o.b., has been indicated as the basis of actual business.

## Company News

DU PONT DE NEMOURS CO.—The regular quarterly dividend of \$1 has been declared.

NORTH BROKEN HILL, LTD.—The directors announce the payment on March 23, in Melbourne, a dividend of 1s. 6d. per share.

INTERNATIONAL NICKEL CO. OF CANADA, LTD.—At a meeting held in Toronto on Monday, the directors decided to omit payment of the quarterly dividend on the common stock.

EASTMAN KODAK CO. OF NEW JERSEY.—The directors announce the regular quarterly dividend of 1½ per cent. on the preferred stock and the regular quarterly dividend of \$1.25 per share on the common stock. In the previous quarter there was an extra dividend of 75 cents on common stock.

NEW TRANSVAAL CHEMICAL CO.—The report for the year to June 30, 1931, states that the balance standing to the credit of profit and loss account, including £14,794 brought forward, was £55,948 (against £70,674, when £5,090 was brought in), out of which dividends for the year have been paid on First and "A" preference shares £24,000, leaving £31,948. The directors recommend payment of remuneration on board, £630, dividend of 7 per cent. (12½ per cent.) on the ordinary £17,500, leaving to be carried forward £13,818.

BRADFORD DYERS' ASSOCIATION, LTD.—Profits of £178,164, against £147,300 in 1930, are reported. After providing for depreciation, however, and crediting surplus provision for income-tax, the loss is £12,215, which necessitates the transfer of the balance of £122,920 from dividends reserve and the reduction of the carry-forward from £99,095 to £24,187, in order that debenture interest and the preference dividend may be met. A loss of £5,254 on investments is met from investments contingency fund. No dividend is recommended on the ordinary shares, which last year received 4 1-6 per cent.

UNITED PREMIER OIL AND CAKE CO., LTD.—At an extraordinary general meeting held on Wednesday at Winchester House, Old Broad Street, London, resolutions were passed providing for the reduction of the capital of the company from £1,500,000 to £937,500 by writing 15s. from each of the 750,000 issued ordinary shares of £1 each, and thereafter restoring it to £1,500,000 by the creation of 2,250,000 ordinary shares of 5s. The chairman stated that despite difficult and chaotic conditions, the results for the past year showed a considerable improvement.

## Britain's Commitments in Europe

### Our Greatest Safeguards

LORD LLOYD OF DOLOBRAN spoke on "Our Commitments in Europe" at an Individualist luncheon, held at the Hotel Victoria on February 10. He said the subject was one that we had to consider, whether we wished to or not. This country had pledged itself in Europe. Were we prepared to honour these commitments? When one considered the relatively tidy order of Europe before the war with the sea of confusion that now exists, one had cause for alarm. We had, by signing the Versailles Treaty, pledged ourselves to support the support the territorial *status quo* in Europe. If war between two Mid-European states broke out to-morrow should we also go to war? By the Locarno Treaty we had promised to go to the aid of France or of Germany if one attacked the other. There was no mention of their helping this country.

These commitments, which no pre-war statesman would have considered, were being undertaken at a time when we had an ever shrinking capacity to fulfil them. Since the war we had greatly decreased our navy, both in personnel, and in equipment. "People," he said, "talk of the parity of navies. There can be no parity of navies until there is parity of needs. During the late war we had only just sufficient forces to save us from starvation."

The greatest safeguard we could have for peace would be for "peace minded" nations, like ourselves, who had nothing to win, and everything to lose by another war, to limit our commitments, both in Europe and elsewhere, to those which we intended, and could carry out.

# ANNOUNCEMENT



The Dorr Company Limited and Oliver United Filters Limited are pleased to announce the amalgamation of their businesses, which on and after January 1st, 1932, will be carried on under the name of

**DORR-OLIVER COMPANY LIMITED.**

The combined resources and personnel, and the linking together of the extensive technical skill and experience in the design, manufacture and operation of the well known Dorr and Oliver products, places the Company in a unique position to serve their many friends and clients upon problems involving equipment, processes and complete plant construction in the Chemical, Industrial, Metallurgical and Sanitary Engineering fields.

All enquiries and correspondence for Dorr and Oliver products should be addressed to:

**DORR-OLIVER COMPANY LIMITED,**  
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Wilton Road,  
London, S.W.1.

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Dorr Clarifiers.  
Dorr Classifiers.  
Dorr Detritors.  
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Dorrcos Diaphragm Pumps.  
Dorrcos Continuous Vacuum Filters.  
Dorrcos Sand Washers.  
Kelly Pressure Filters.  
Oliver-Borden Thickeners.  
Oliver Centrifugal Filtrate Pumps.  
Oliver Disc-type Continuous Vacuum Filters.  
Oliver Rotary-type Continuous Vacuum Filters.  
Oliver Acid-Resisting Centrifugal Pumps.  
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## Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

### Mortgages and Charges

[NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an \*—followed by the date of the Summary, but such total may have been reduced.]

ALLIANCE ARTIFICIAL SILK, LTD., Oulton Broad. (M., 20/2/32.) Registered November 30, £363,000 debts, inclusive of £113,000 already registered (supplemental to Trust Deed dated November 21, 1930); charged on property at Oulton Broad, also general charge; also registered December 1, £3,250 debts, part of £113,000; charged as above; also registered February 3, Trust Deed dated January 28, 1932 (supplemental to Trust Deed dated November 21, 1930) collaterally securing £363,000 debts.; charged as above. \*Nil. April 8, 1930.

### London Gazette, &c.

#### Winding-Up Petition

BOLGAR OIL PROCESSES, LTD. (W.U.P., 20/2/32.) A petition for the winding-up of this company by the High Court of Justice was, on February 8, presented by Walter Henry Stephenson Burlton, of Langford, 20 Sherfield Road, Grays, Essex, and is to be heard at the Royal Courts of Justice, Strand, London, W.C., on February 22.

#### Company Winding Up

METAFILTERS (1929), LTD. (C.W.U., 20/2/32.) Statutory meetings at Carey Street, Lincoln's Inn, London, W.C.2, February 25. Creditors at 11.30 a.m., contributories at 12 noon.

#### Company Winding Up Voluntarily

HELLIN SULPHUR, LTD. (C.W.U.V., 20/2/32.) By special resolution, February 10. Mr. Ernest James, St. Lawrence House, Trump Street, London, E.C.2, appointed liquidator.

### New Companies Registered

ASBURY, BRODIE AND CO., LTD. Registered February 8. Nominal capital £7,000. Manufacturers, refiners and importers of and dealers in nickel, cobalt, tungsten, iron, steel, copper, bronze, aluminium, lead, tin, zinc, antimony, pewter and their respective alloys and by-products; manufacturing chemists, etc. A subscriber: W. L. Pengelly, 2 South Square, Grays Inn, London, W.C.1.

HEPPELS (1932), LTD. Registered as a private company on February 4. Nominal capital £100 in 1s. shares. Manufacturers of and dealers in chemicals, gases, drugs, medicines, plaster of paris, gypsum, disinfectants, fertilisers, salts, acids, oils, colours, etc. A subscriber: H. Fildes, Endon House, Kerridge, near Macclesfield, Cheshire.

HUNT BROTHERS (CASTLEFORD) LTD. Registered February 12. Nominal capital £10,000 in £1 shares. To acquire the business of chemical manufacturers, carried on by the executors of the late F. T. Hunt at Castleford as "Hunt Brothers." Directors:—F. J. F. Curtis (chairman), 41 Park Square, Leeds, E. C. Peacock.

## The Gas Light and Coke Co.

### Expansion During the Past Year

SIR DAVID MILNE-WATSON presided at the annual meeting of the Gas Light and Coke Co. on February 12, and announced an increase of almost 1½ per cent. in gas sales during the year ended December 31, representing an increase of £78,000 in income. Consumers increased by 27,000 and the company supplied 86,000 new appliances. Tar and its products, he said, yielded £6,000 more than in the previous year, while the loss on ammoniacal liquor, at £5,000, was £11,000 better

than in 1930. The ordinary dividend for the year was £5 12s. per cent.

The company had recently put on the market a new smokeless fuel, "Cleanglow," which could be used in open grates. Ordinary coke was increasingly popular for domestic boilers and furnaces. In the past year the company sold increasing quantities of tar for road making. Benzol sold during 1931 amounted to 2½ million gallons, and the company was taking steps to increase the output to something like five or six million gallons.

Sir David remarked that from January 1 this year the company had taken over the Southend-on-Sea and Brentwood Gas Companies, the effect of which was to extend the area of supply to well over 500 square miles, with 15 manufacturing stations, 51 showrooms, 4,970 miles of mains and 49,000 public lamps.

The company had been fortunate in its latest Act of Parliament to get some relief from the trammels which had bound it for so many years, but no relief had yet been given to the industry as a whole. A committee, of which he had the honour to be a member, was appointed early last year by the Board of Trade to consider what alterations were required in gas legislation. Many meetings had been held, and certain progress had been made. He hoped that, after the committee had reported, Parliamentary time would be found to put its recommendations into effect, especially as they would be largely based on those made long ago by various Government committees, notably the National Fuel and Power Committee.

### Tariff Changes

COLOMBIA.—A Decree has been issued reducing from 10 to 5 per cent. *ad valorem* the duty levied on the export of platinum from Colombia.

GERMANY.—The Commercial Treaty between Germany and Switzerland of July 14, 1926, expired on February 4. Consequently, the Customs duties applicable to certain goods imported into Germany from Switzerland and other countries enjoying most-favoured-nation treatment in Germany have now been increased. The Tariff amendments, which came into force on February 5, are shown below, so far as they affect chemicals:—

	Duty in Reichsmarks per 100 kg. Former Revised
Caustic soda, solid .....	4 4.50
Perchlorate of potash not in shells or capsules .....	2.50 4
Calcium carbide .....	4.25 5
Grafting mastic (alcoholic grafting wax) .....	15 30
Metaldehyde, solid ("Meta" fuel) .....	20 40
Nicotine, crude or purified .....	Free 1,000
Nicotine compounds .....	400 1,000

### Chemical Trade Inquiries

These inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35 Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country) except where otherwise stated.

BELGIUM.—An agent at Brussels wishes to obtain representation of United Kingdom manufacturers of perfumery and pharmaceutical products. (Ref. No. 314.)

FINLAND.—A Finnish agency firm at Helsingfors desires to secure representation of United Kingdom manufacturers of heavy and industrial chemicals. (Ref. No. 323.)

HOLLAND.—An agent at Hillegersberg is desirous of representing United Kingdom manufacturers of bakelite mouldings, etc., for the electrical industry. (Ref. No. 329.)

NORWAY.—A firm of agents at Oslo wishes to obtain representation of United Kingdom manufacturers of heavy chemicals for paper and cellulose factories. (Ref. No. 339.)

YUGOSLAVIA.—An agent at Zagreb desires to obtain representation of British manufacturers of chemicals used in dyeing and tanning, including borax, chrome alum, potassium bichromate and sodium hydrosulphite. (Ref. No. 347.)

